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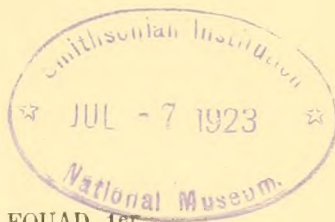
DE LA

## SOCIÉTÉ ENTOMOLOGIQUE D'ÉGYPTE

FONDÉE LE 1<sup>er</sup> AOUT 1907

*Fatti non foste a viver come bruti,  
Ma per seguir virtude e conoscenza.*

DANTE.



SOUS LE HAUT PATRONAGE DE SA MAJESTÉ LE ROI FOUAD 1<sup>er</sup>

2<sup>me</sup> VOLUME — 1<sup>er</sup> FASCICULE.

ANNÉE 1922.

### A MONOGRAPH OF EGYPTIAN DIPTERA

(Part I. Fam. SYRPHIDAE)

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LE CAIRE

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## Introductory Note

*by*

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The study of the Egyptian fauna has long attracted the attention of zoologists in most European countries as evidenced by the number of expeditions, both private and otherwise, for the purpose of studying the animals occurring in the Nile Valley. The results of these expeditions, however, give a very inadequate idea of all except a few isolated groups of animals, as it is impossible for a visitor to a country to obtain anything like the same insight into its natural history, as that obtained by resident observers. The number and occurrence of animals varies, not only with each season, but also in different years, and apart from this a visitor does not possess the same degree of intercourse with the natives and other advantages possessed by the occupants of the country.

Until comparatively recently the fauna of Egypt has rarely been studied by any resident naturalists and therefore it is not surprising that our knowledge of most groups of animals, and especially invertebrates, is still very incomplete.

An additional cause for the lack of information is the absence of any continuity in the studies of the fauna, and in particular the absence of an adequate Natural History Museum for the reception of specimens. Through the untiring efforts of Major S. S. Flower, Director of the Zoological Survey of Egypt, a start has been made in this direction, but the building provided is inadequate for the reception of even the vertebrate fauna of Egypt. In addition the Entomological Section of the Ministry of Agriculture, under the direction of Dr. L. Gough, has formed the nucleus of a collection of the insects of the country, and the Sultanic Agricultural Society a collection of those of economic importance.

Apart from these three institutions, no recent attempt has been made to remedy this defect in the intellectual development of Egypt

and as a result the inhabitants, both Egyptian and non-Egyptian, have very little knowledge of the native fauna and in consequence practically no interest in it. In this respect it is well to recall that when the Egyptian School of Medicine was formed at Abou Zabel in the reign of Mohamed Ali, special attention was paid to the formation of a Natural History Museum, as the importance of this branch of education was fully recognised by its illustrious founder (1). It is sad to have to record the failure of this pioneer effort to build up a museum, as the very fine collections that were got together by a number of enthusiastic naturalists have either been dispersed or disappeared.

The majority of the collections made in Egypt, however, have been taken back to Europe and are scattered throughout the various public and private museums of England, France, Denmark, Germany, etc., and with the exception of entomology, the only representative private collection in this country is that of Dr. Walter Innes Bey. Moreover the literature on the subject is equally scattered and it is extremely difficult to obtain information about most groups of Egyptian animals.

With the idea of placing the Zoology of the Nile Valley on a more satisfactory basis the late Dr. J. Anderson commenced his great work on the Zoology of Egypt and through his efforts the four well known volumes were published by the Egyptian Government, dealing respectively, with the mammals, reptiles and batrachians, and fishes. It is to be regretted that his death interrupted the continuation of this work, which might have formed the basis of a comprehensive work on the Zoology of Egypt comparable with the "Fauna of British India."

In order to help in the development of a fuller knowledge of the fauna of this country it is hoped to publish a series of monographs each dealing with some particular group of animals. In this way all information concerning the native fauna will gradually be collected in a form easily accessible to scientific workers and others interested in the Egyptian Fauna.

The present volume by H. C. Efflatoun, represents the first part of a monograph on Egyptian Diptera which it is intended to issue by installments, each dealing with one or more families. When complete the work will contain descriptions and plates illustrating all known Egyptian species. The advantages possessed by a resident naturalist are well exemplified in the present volume, for in one family, Efflatoun is able to record the presence of ten

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(1) *Vide* CLOT BEY, (1840), *Aperçu Générale sur l'Égypte*. Paris. Fortin Masson & Cie.

species new to Egypt, as well as to correct certain errors in the literature concerning the previously known forms.

In conclusion some reference should be made to what is meant by the term «Egyptian» in this work, as in the past species have been vaguely recorded as coming from Egypt without any clear idea of the geographical boundaries of the country. It is very difficult to adopt the present political boundaries for they are liable to be changed and, moreover, they include at least four distinct faunas. We have, therefore, adopted Storey's (1) suggestion of restricting the term Egyptian to species coming from a more circumscribed area including the Nile Valley from Assouan to the Mediterranean, bounded on the East by the Suez Canal and a line running South from about Suez, and on the West by a line running South from Mersa Matruh, so as to include the oases of Dakhla and Siwa. Practically all the species described in this volume occur in the Nile Valley itself, and in those few instances where they occur outside this area, special attention will be drawn to them, in order to prevent their being loosely classified as «Egyptian.»

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(1). G. STOREY: The Identification of the Orthoptera figured by Savigny, and other notes on Egyptian Orthoptera. Bull. Soc. Ent. Egypte, 1918, Fasc. 3 (1919).



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## PREFACE.

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The present volume is the first part of a Monograph of the Egyptian Diptera, which it is my intention to issue in separate parts, as they are completed. Each part will deal with one or more families and will be complete in itself, and therefore there is no necessity to adhere to any specific order of issue. The better known groups are being completed first, in order to leave time to obtain a fuller knowledge of the more obscure members of the Order.

Such a large work is perhaps rather beyond the capacity of a single individual and the writer would hardly have attempted such an ambitious project without the promise of help from many of the leading Dipterologists such as Professor Dr. M. Bezzi, Dr. J. Ville-neuve, Mr. Tonnoir, Mr. Pierre and Mr. Collin.

I should like to express my especial indebtedness to Prof. E. Hindle for much helpful advice and criticism and for many valuable suggestions. I am very much indebted to Prof. Dr. Bezzi for his help in the identification of the members of the family under consideration in the present volume and also for much valuable information. My thanks are also due to Mr. T. W. Kirkpatrick of the Cotton Research Board who suggested several improvements in the key to the genera and Prof. Dr. A. Mochi and Mrs. Mochi for much assistance in the literature.

H. C. E.



## INTRODUCTION.

The first volume of a Monograph of the Egyptian Diptera is hardly the place for a discussion of a complete classification of the Order, which at present would necessarily be nothing more than a resumé of the opinions of previous writers, whereas when the Egyptian Diptera have been more extensively studied it is hoped that more light will be thrown on this subject, which, so far is in a very unsatisfactory condition. Further it is my opinion that no final phylogenetic classification can be arrived at in this, or any other order, until a thorough survey has been made of the fauna of Australasia, such as has been done by Meyrick in Lepidoptera, and is now being accomplished by Tonnoir, who is working on the New Zealand Psychodidae, which are undoubtedly one of the most primitive families of Diptera.

In my descriptions I have, as a rule, adopted the system followed by Verrall; in addition, many of the characters given by Bezzi have also been used. The only exception is in the system of Wing Venation, which is that of Comstock\*, as I consider this to be the most readily intelligible and the least artificial, being applicable to all orders of insects. The table of the Sub-Families and Genera have been adopted from those given by Verrall (*British Flies*, Vol. VIII, 1901) and Bezzi (*Syrphidae of the Ethiopian Region*, 1915). I have included in these tables the sub-families and genera which so far have been recorded from North Africa, as it is very likely that some of them may eventually be found in Egypt, and also to assist in demonstrating the characters of those already recorded from this country.

H. C. E.

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\*J. H. Comstock: *The Wings of Insects*, Ithaca, New York, 1918.





# CYCLORRHAPHA

## ASCHIZA

### SYRPHOIDEA

#### Syrphidae

##### GENERAL CHARACTERS OF THE FAMILY.

Small to rather large flies which do not possess a frontal suture bladder and without any distinct chaetotaxy. Head as broad as the thorax or a little broader, sometimes elongate or produced in the lower part. Frons more or less produced. Face moderately broad, usually more or less pubescent and clothed with dust, but never bristly, and sometimes quite bare, never with longitudinal furrows or lateral ridges; usually it retreats below the antennae, and then is produced into a central knob, after which it is excavated and again produced to the upper mouth-edge. Occiput usually shallow and bearing dust and pubescence which is continued to the vertex; frequently the occiput is widened about the middle through an inward bend of the eye. Vertex more or less triangular and never bearing any bristles. Ocelli always present. Frons more or less produced, sometimes conspicuously, and never bearing any bristles. Eyes large, bare or pilose, usually touching, or at least approximated in the male, and well separated in the female. Antennae usually more or less drooping, rarely porrected, and approximated at their base, each consisting of three joints, with a dorsal arista on the third joint; the three joints vary in length, but the third is usually the longest; the dorsal arista is usually one-jointed and bare in Egyptian species, although it may be remarkably plumose in other Palaearctic groups and is distinctly three-jointed in the genus *Eumerus*; occasionally this arista may become a terminal style in which case the antennae are conspicuously porrected and elongated (*Cerioides*).

Thorax comparatively large and robust, of normal shape, usually dark coloured with three paler, more or less conspicuous

longitudinal lines. It very often bears a distinct soft pubescence which may either be very slight and inconspicuous, or quite long, close and dense, but which hardly ever bears any bristles or bristly hairs. Scutellum usually resembling the thorax in colour and pubescence and sometimes bearing bristly hairs on its margin which provide important specific characters.

Abdomen varying very much in shape and colour and composed of five or six visible segments and never bearing any bristly hairs. Hypopygium nearly always asymmetrical and usually not prominent; the abdomen is generally thinly pilose or bare, but sometimes clothed with dense pile or dust or both.

Legs usually moderately strong, but varying very much in shape and pubescence and when bristles are present they are found only on the under surface of the femora. The females of all species have the legs reduced to a very simple form. Sometimes the tibiae and the apices of the tarsal joints bear small apical spurs and occasionally the hind trochanters and femora are armed beneath, especially in the male, and these afford valuable characters for distinguishing species.

Wings comparatively large and with a specialised and distinctive venation. Radius 4+5 never forked; Media 1+2 terminates in Radius 4+5 well before or near the tip; Cell R1 either opened or closed; basal cells large and well distinguished; cell A1 elongated and always closed before the border of the wing. Running right across the radio-median cross-vein, between Radius 4+5 and Media 1 and almost parallel with them, the *vena spuria* or false vein is nearly always present. Although this false vein is characteristic of the family so that its presence certainly secures the admission of any species to this family, its absence does not exclude a species, as it often exists in a very faint or almost imperceptible form. Alulae always distinct and nearly always well developed. Squamulae small or fairly large with a distinctly thickened margin and almost always with delicate fringes which may be composed of simple or compound hairs. Halteres usually moderate in size.

The Syrphidae form one of the largest, most sharply defined, and best known of all the families of Diptera. There are over 2500 species known throughout the world. They occur in all regions from the Tropics to the Poles. They contain among them many of the brightest coloured flies and in the sunlight are remarkably good hoverers and usually very active fliers. The adults are almost always attracted by flowers, especially *Compositae*, *Umbelliferae* and *Rosaceae*. Some species fly in and out about low herbage and flowers and others may be seen resting on leaves and

even on the earth in the sunlight. A few of them are injurious in the larval stage such as *Eumerus* and *Syrirta*, but on the other hand many are very beneficial, being aphidiphagous (*Syrphus*, *Paragus*, *Sphaerophoria*, etc.) ; some live in liquid filth and decaying vegetable matter (*Eristalis*) and others live in the stems of plants and in fungi. The larvae of some species inhabit the nests of the large *Hymenoptera* such as *Vespa* and *Bombus* and they probably act rather as scavengers than as parasites, while others have been found in ants' nests. I do not agree with Verrall's supposition that "*Eumerus* in some way lives in the burrows of small aculeate Hymenoptera" as both *E. amoenus* and *E. vestitus*, the commonest Egyptian species, have been bred from various plants such as onions, potatoes, water-melons, etc. It is probable that Verrall's supposition is derived from the curious habits of the adults which mimic Hymenoptera in their flight and in the case of one or two species can only be caught on the ground or among low lying plants where nests of Hymenoptera may be in close proximity. It is probable however that *Eumerus* found in such localities are about to oviposit and are merely seeking a way to the roots of the plants which their larvae inhabit. It is not unlikely, therefore, that occasionally these insects may enter the burrows of Hymenoptera or any other holes in the ground.

The metamorphoses of most genera have been more or less studied. The larvae are rather various in appearance, and as remarked above, their biology is at the same time very different, in spite of this they have, however, some features in common. Lundbeck says that "the dermis is always tough or more or less leathery, "and it is shagreened from small spinules or hairs which are often "divided into two to four corrugations. There are in all twelve "segments, the head included. Above the mouth opening are two "antennae-like organs; they are, or may be described as, two-jointed, "the last joint bearing two papillae alongside; these two papillae "are not similar, one has at the end a small refractive body, while "the other, the one nearest the mouth, is truncate and generally a "little crenulated at the apical margin. These organs, which are "present and nearly uniform in all cyclorrhaphous larvae, are "generally termed antennae; Lowne takes them to be the maxillae. "They have been studied by Wandolleck (Zool. Anz. 1898, 283) and "this author concludes that the whole organ must be taken as an "antenna, and this in spite of his observation, that the upper papilla "with the refractive body gets its nerve from the upper pharyngeal "ganglion, while the other papilla, which is nearer the mouth gets "the nerve from the lower ganglion. De Meijere suggests in his "work on the *Lonchoptera*-larva (Zool. Jahrb. Abtheil. für Syst., "XIV, 1900, 100) after comparing the organ with the antennae and

“maxillary palpi in the larva of *Lonchoptera* that the organ is  
“really the antenna and maxillary palpus, which are here quite  
“close standing and fused; the papilla with the refractive body is  
“the antenna, the other the maxillary palpus (I think this inter-  
“pretation is quite correct...) The mouth is either armed with  
“hooks, sometimes bifid, or it has only a pharyngeal skeleton.  
“Above and at the sides of the body are always some larger spinu-  
“les or warts; they may be very small and slightly pronounced, (I  
“think partly dependent on the contraction of the dermis) or they  
“may be somewhat larger or be developed into longer filaments, as  
“in the first group of the species of *Syrphus*; they often bear  
“branched hairs or spines. They are always arranged in a certain  
“way; the prothoracal segment has generally some, either more or  
“less numerous spinules; on the meso- and metathoracal segments  
“and on the first abdominal segment there is on each a transverse  
“row of six spinules; on the other segments they are placed thus  
“that there are two in the middle on one corrugation and two  
“towards each side on the following corrugation; when the segments  
“are less distinctly divided into corrugations, the spinules or warts  
“may be all placed on one corrugation, but however the two lateral  
“on each side more posteriorly than the two median; at the sides  
“each segment has three spinules, generally one above and two  
“more downwards, besides, there is generally one more ventrally.  
“On the last segment they are also present, but the arrangement is  
“here various. The spinules or warts are, as said, always present  
“and the longer filaments often present at the sides of the last  
“segment, belong to them and always answer to them in number  
“but when these segments are much elongated the arrangement is  
“effaced; also the threads on the sides of the tail-shaped part in  
“the larvae of the *Eristalinae*, and the filaments surrounding the  
“posterior margin of the body in the *Volucella*-larva belong to the  
“same category. Only in a single case (some *Volucella*-larva)  
“there are, besides the mentioned spinules or warts, some more.  
“Many larvae have below pairs of pro-legs armed with spines,  
“generally six or seven pairs. The larvae are amphipneustic with  
“generally small anterior spiracles at the hind margin of the first  
“thoracal segment, and with posterior spiracles on a shorter or  
“longer posterior process on the last segment, sometimes situated  
“at the end of a long, tail-shaped part. As the syrphids are  
“cyclorrhaphous flies the pupa is a barrel-pupa; the larvæ pupates  
“within the skin of the last larval stage; the skin is contracted  
“and altered in the well known way and in it lies the real pupa;  
“the pupa with its enclosing barrel or puparium is in the des-  
“criptions simply termed the pupa. The pupa still shows the  
“larval attributes, but the various spinules or filaments, the prolegs

“etc., are generally shorter and less distinct; the posterior spiracular process is present as in the larva (but without function). The prothoracal spiracles of the pupa behave, as mentioned above in different ways; in many species (most of the *Syrphinae*) they do not protrude through the puparium and are thus not visible externally, but in some of the *Syrphinae* and in nearly all the others they protrude as shorter or longer anterior spiracular tubes, beset with tubercles in various ways. The points through which they protrude are often (perhaps always) preformed in the larval skin; these points lie in the first abdominal segment... The opening of the puparium takes place in a way characteristic for the family; two pieces are detached, both belonging to the dorsal side; the lower piece stretches from the mouth opening over a part of prothorax, over mesothorax and a part of metathorax, the upper piece then continues over the rest of metathorax, the first and second abdominal segments and a part of the third abdominal segment; this latter piece has near its anterior margin the anterior spiracular tubes, when such are present. As said it is only the dorsal part of the segments which are detached. This mode of opening is quite another than in other *Cyclorrhapha*, where both dorsal and ventral parts are detached, and it is in connection with the fact that in the Syrphid pupa the mouth opening by the contraction has become situated quite downwards at the lower anterior margin and is not terminal as in most other cyclorrhaphous pupae. Brauer in his work on the larvae has given a quite erroneous statement, as he says that the lower side of the anterior segments by the contraction at the pupation becomes situated terminally at the anterior end, while it is in reality quite opposite. De Meijere has thoroughly described and figured the facts for some Syrphid pupæ (Zool. Jahrb. Abtheil. für Syst., XIV, 1900, 122, Taf. 7 Fig. 37-39)..... As the Syrphids have no frontal bladder the opening must be caused in another way. Becker says (Wien. ent. Zeitg. I, 1882, 51), that it is caused by a widening of the epistoma (Untergesicht), this is also so; when a pupa is taken out of the puparium the epistoma is somewhat folded in, and it gets first its final more or less protruding shape by the opening of the puparium. The pupae are generally found in the same places as the larvae. The deposition of the eggs takes place where the larvae live; the eggs of *Syrphus* are laid singly between Aphids on leaves....”

The only record I can trace of Syrphidae being attacked by parasitic hymenoptera in Egypt is *Bassus lætatorius* Fabr., which has been bred from a larva of *Syrphus* sp. by Mr. T.W. Kirkpatrick; a good many however have been bred in Europe from *Lasiophthicus*, *Xanthogramma*, *Eristalis*, *Syrphus* and other genera.

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 TABLE OF THE NORTH AFRICAN SUB-FAMILIES.
 

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1	(6)	Antennæ moderate in length and drooping, never placed on a produced frons.	
2	(3)	Radio-median cross-vein placed before the middle of cell M2. ....	SYRPHINÆ.
3	(2)	Radio-median cross-vein placed after the middle of cell M2.	
4	(5)	Cell R5 remarkably contracted about the middle by a deep loop in Radius 4+5	ERISTALINÆ.
5	(4)	Radius 4+5 not looped, if somewhat looped ( <i>Eumerus</i> ) the turned up part of Media 1+2 is doubly bent. ....	MILESINÆ.
6	(1)	Antennæ porrected, sometimes placed on a produced frons.	
7	(8)	Radius 4+5 normal, without a loop or adventitious veinlet .....	CHRYSOTOXINÆ.*
8	(7)	Radius 4+5 with a loop or veinlet almost dividing the cell beneath it (cell R5) into two.	
9	(10)	Arista dorsal; face rounded and pilose; scutellum usually armed or emarginate	MICRODONTINÆ.*
10	(9)	Style terminal; antennæ often placed on a long petiole. ....	CERIOIDINÆ.

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 \*So far not represented in Egypt.

## TABLE OF NORTH AFRICAN GENERA.

- |    |      |   |                 |
|----|------|---|-----------------|
| 1  | (40) | Antennæ moderate in length and more or less drooping, never placed on a produced frons.   |                 |
| 2  | (29) | Kadio-median cross-vein placed before the middle of cell M2.....  | (SYRPHINÆ).     |
| 3  | (6)  | Face flat or retreating, without a central knob; eyes and face always hairy; thorax always dark and face always black.                |                 |
| 4  | (5)  | Face with the upper mouth edge conspicuously produced .....   | 1 PSILOTA.*     |
| 5  | (4)  | Face without even the upper mouth edge produced; frons of female with grey side dust spots.....                                       | 2 PIPIZA.*      |
| 6  | (3)  | Face with a central knob or a cone-like snout.  |                 |
| 7  | (8)  | Face arched and not hollowed beneath the frontal prominence and always partly or wholly yellow (Pl. I, figs. 5, 6, 7) .....           | 3 PARAGUS.      |
| 8  | (7)  | Face hollowed below the antennæ and produced again to a central knob or upper mouth edge or to both.                                  |                 |
| 9  | (12) | Entirely dark species without any pale markings except on the legs and beneath the third joint of the antennæ                         |                 |
| 10 | (11) | Metallic coloured species; no eye-margins; outer top angles of both cells R5 and M2 approximating right angles; eyes always bare..... | 4 CHRYSOGASTER* |

\*So far not represented in Egypt.

- 11 (10) Species dark but not metallic; distinct eye-margins present; outer top angles of cells R5 and M2 always acute. . . . . 5 CHILOSIA.\*
- 12 (9) Species with pale markings on parts of the head, thorax, scutellum and abdomen.
- 13 (14) Hind femora thickened and spinose beneath (Pl. II, fig. 8). . . . . 6 SYRITTA.  
(MILESINÆ).
- 14 (13) Hind femora not thickened or spinose.
- 15 (26) Abdomen not conspicuously constricted about the base.
- 16 (17) Face and scutellum entirely æneous or black (sometimes appearing grey or yellowish from superincumbent dust); thorax provided on the sides above the notopleural depression and before the transverse suture with a rather prominent tubercle; cell M2 shorter than cell R5. . . . . 7 MELANOSTOMA.\*
- 17 (16) Face and scutellum partly or wholly yellowish.
- 18 (21) Thorax with bright yellow side lines and the pleura with yellow markings; abdomen narrow, elongate and with parallel sides.
- 19 (20) Abdomen narrower than the thorax, not flattened, usually longer than the wings; male genitalia very large and orbicular . . . . . 8 SPHEROPHORIA.
- 20 (19) Abdomen as broad or a little broader than the thorax, flattened, shorter than the wings; male genitalia of moderate size . . . . . 9 XANTHOGRAMMA.
- 21 (18) Thorax without any bright yellow side lines and the pleuræ not yellow spotted.

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\*So far not represented in Egypt.



- 22 (23) Frons inflated (Pl. I, fig. 11)..... 10 LASIOPHTHICUS.
- 23 (22) Frons normal.
- 24 (25) Thorax provided in front with a distinct collar of hairs; ocelli at some distance from the vertex..... 11 ASARCINA.\*
- 25 (24) Thorax without a distinct collar of hairs; ocelli placed near the vertex.. 12 SYRPHUS.
- 26 (15) Abdomen conspicuously constricted about the base, tubular and club-shaped; markings less well defined..... 13 PSEUDODOROS.
- 27 (2) Radio-median cross-vein placed after the middle of cell M2.
- 28 (35) Radius 4+5 looped causing cell R5 to be remarkably contracted about the middle ..... (ERISTALINÆ)
- 29 (30) Radius 1 united with Radius 2+3 at the end, (Pl. I, figs. 1, 2)..... 14 ERISTALIS.
- 30 (29) Radius I separated from Radius 2+3..
- 31 (32) Hind femora with a distinct tooth-like process beneath, near the apex..... 15 MERODON.\*
- 32 (31) Hind femora not toothed.
- 33 (34) Eyes hairy ..... 16 MYIATROPA.\*
- 34 (33) Eyes bare ..... 17 HELOPHILUS.

*Subgenera* :—

- 1 (2) Eyes of male almost touching ..... MESEMBRIUS.
- 2 (1) Eyes of male widely separated

\*So far not represented in Egypt.

- 3 (6) Third joint of antennæ not transverse; abdominal markings (when present) transverse.
- 4 (5) Face moderately produced at the upper mouth-edge . . . . . HELOPHILUS and PARHELOPHILUS.
- 5 (4) Face very much produced at the upper mouth edge . . . . . EURINOMYIA.\*
- 6 (3) Third joint of antennæ transverse; abdominal markings longitudinal LIOPS.
- 35 (28) Radius 4+5 not looped, if somewhat looped (*Eumerus*) the turned up part of Median 1+2 is doubly bent. . . . . (MILESINÆ).
- 36 (37) Face hollowed beneath the antennæ; outer top angle of cell R5 acute. . . . . 18 SYRITTA.
- 37 (36) Face not hollowed beneath the antennæ, outer top angle of cell R5 a right angle, or obtuse, (fig.14, Pl. I and fig.3, Pl. II) 19 EUMERUS.
- 38 (1) Antennæ porrected.
- 39 (40) Radius 4+5 normal, without a loop or veinlet which may almost divide cell R5 into two . . . . . (CHRYSOTOXINÆ).\*  
20 CHRYSOTOXUM.
- 40 (39) Radius 4+5 with a loop or veinlet almost dividing the cell beneath (cell R5) into two
- 41 (42) Arista dorsal . . . . . (MICRODONTINÆ).\*  
21 MICRODON.
- 42 (41) Style terminal . . . . . (CERIOIDINÆ).  
22 CERIOIDES.

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\*So far not represented in Egypt.

## SYRPHINÆ

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### 1. PARAGUS LATR.

LATR., Hist. Nat. d. Crust. et d. Ins., XIV. 359. DXXII, (1804) et Dict. d'Hist. Nat. Deterville, XXIV. 194. (1804).

Small thick-set, short flies of more or less dark colour, except parts of the face, scutellum, abdomen and legs.

Head rather flattened, broader than the thorax, face not hollowed below the antennae, but produced into a knob and always mostly or entirely yellow or pale yellow. Eyes pilose with the hairs often running into stripes, always touching in the male and well separated in the female. Antennæ slightly porrected, with the third joint longer than the basal two together, and dorsally bearing a short, bare arista, which is inserted before the middle of the joint.

Thorax rather quadrate in shape and with very simple inconspicuous pubescence. Scutellum with a vestiture similar to that of the thorax, sometimes entirely æneous-black and often pale at the tip, or with the lower half entirely yellow. Abdomen with a simple, very short pubescence, about as wide at the thorax and of about equal width throughout, with a shallow transverse depression on each segment. Legs simple and rather slender. Wings very much like that of the genus *Syrphus* but the turned up portion of M1+2 and the median cross-vein are not parallel to the wing margin, and keep well away from it, and the turned up portion of M1+2 possesses a peculiar undulation; the radio-median cross-vein is placed well before the middle of cell M2, consequently Verrall states that the peculiar undulation of the turned up portion of M 1+2 may suggest a relationship to the genus *Eumerus*, which is also in some way connected with the small Aculeate Hymenoptera; but the position of the radio-median cross-vein which is

obviously placed before the middle of cell M2, seems to exclude the possibility of any relationship between these genera.

The larvæ undoubtedly feed on Aphides. I have caught *P. tibialis* and its two well known varieties hovering over *Sonchus* in the Mariout District. Mr. F. A. Willcocks has bred the larvæ of *P. ægyptius* on *Aphis gossypii* and *Hyalopterus pruni* on Apricot in Ghezireh.

*SYNONYMY*.—This genus was established by Latreille in 1804 for *Mulio bicolor* of Fabricius and Verrall states that there has never arisen a doubt about the synonymy or limits of the genus.

### TABLE OF EGYPTIAN SPECIES.

- 1 (2) Face with a black middle lines in both sexes ; scutellum entirely black in both sexes (Pl. I, fig. 6), ..... **1 tibialis** FALL.
- 2 (1) Face entirely whitish-yellow or yellow in both sexes; scutellum with the tip or often the lower half yellow in both sexes (Pl. I, fig. 5). **2 ægyptius** MACQ.

#### 1. *P. TIBIALIS* FALL. (Pl. III, figs. 2, 3, 4).

FALL., Dipt. Suec. Syrph., 60.5, pp. (*Pipiza*) (1817) ; MEIG., System. Beschreib., III. 183.13. (1822) ; MACQ., Rec. Soc. Sci. Lille, 1828.187.6. (1829) et Suit. à Buff., I. 567.14. (1834) ; ZETT., Ins. Lapp., Dipt., 618.2. (1838) et Dipt. Scand., II. 852.6 (1843) ; SCHUMM., Ubers. d. Arb. u. Verand. d. schles. Ges. f. vaterl. Kultur, 1842.164. (1842) ; ZETT., Dipt. Scand., VIII. 3188.6. (1849) ; LW., Verh. zool.-bot. Ver. Wien, VII. 80.30. (1851) et Dipterenf. Südafr., 294. (366) (1860) ; SCHIN., Verh. zool.-bot. Ver. Wien, VII. 303.8. (1857), Fauna Austr., Dipt., I. 257.1. (1862) et Nov. Reise, Dipt., 339.103. (1868) ; BONDS., Finl. tväving. Ins., I. 284.3. (1861) ; WALK., List Dipt. Brit. Mus., III. 544. (1849) ; MALM., Goeteb. Kongl. Vet. Handl., 70. (1863) ; WILLIST., Bull. Unit. Stat. Nat. Mus., (31), 19. t. I; f. 8. (1886) ; NEUHAUS, Dipt. Marchica, 90. 2. (1886) ; STROBL, Mittheil. Naturwiss. Ver. Steiermark, XXIX. 1892.197. (1893) ; SNOW, Kansas Univ. Quart., III. 227. (1895) ; TOWNS., Psyche, VIII. 140. (1897) ; VERR., Brit. Fl., VIII. 150.1. f.

175-177 (1901); OSBURN, *Canad. Entom.*, XXXVI. 216.4. (1904); ALDR., *Catal. N.A. Dipt.*, 351. (1905); STROBL, *Mem. R. Soc. Espan. Hist. Nat.*, III. 330. (115). (1906); SACK., *Verh. zool.-bot. Ges.*, LVI. 470. (1906); BEZ., *Ditt. Eritrei*, II. 12. 12., 21. 75. (1908), *Dipt. Syriaca et Aegypt.*, 56. (20). 88. (1909), *Syrph. Ethiop. Reg* 12. 15.6. (1915) et *Syrph. æthiop. Mus. Nat. hungarici*, 132 (2) 5.6 (1921) LUNDB., *Dipt. Danica*, V. 47-49. f. 7.8. (1916).

*SYNONYMY*:—*æneus* MEIG., *System. Beschreib.*, III. 1831.11. (1822); MACQ., *Suit. à Buff.*, I. 567.12. (1834); ZETT., *Dipt. Scand.*, II. 854.8. (1843) et VIII. 3188.8 (1894).

*femoratus* MEIG., *System. Beschreib.*, III. 184.14. (1822); CURT., *Brit. Entom.*, VIII. 593., 2.6. (1836); WALK., *List Dipt. Brit. Mus.*, III. 544. (1849) et *Ins. Britann. Dipt.*, I. 268.4. t. X. f. 3. (1851); ROND., *Dipterol. Prodr.*, II. 191.2. (1857); NEUHAUS, *Dipt. Marchica*, 9.2. *b.* (1886); STROBL, *Wien. Ent. Zeitg.*, XVIII. 147. 115. (1889).

*hæmorrhous* MEIG., *System. Beschreib.*, III. 182.00. (1822); ST. FARG. & SERV., *Encycl. Méthod.*, X. 2.6. (1825); MACQ. *Suit. à Buff.*, I. 567.11. (1834); NEUHAUS, *Dipt. Marchica*, 9.2. *a* (1886); JONES, *Journ. New York Entom. Soc.*, XV. 90.2. (1907).

*obscurus* MEIG., *System. Beschreib.*, III. 183.12. (1822); MACQ., *Rec. Soc. Sci. Lille*, 1828. 187.7. (1829) et *Suit. à Buff.*, I. 567.13. (1834); CURT., *Brit. Entom.*, VIII. 593., 2.4. (1836); WALK., *List Dipt. Brit. Mus.*, III. 544. (1849) et *Ins. Britann.*, *Dipt.*, I. 268.3. (1851); STROBL, *Mem. R. Soc. Espan. Hist. Nat.*, III. 330. (1906).

*sigillatus* CURT., *Brit. Entom.*, VIII. 593. t. (1836).

*geniculatus* CURT., *Guide*, Edit. II. 250.5 (1837).

*trianguliferus* ZETT., *Ins. Lapp.*, *Dipt.*, 618.3. (1838) et *Dipt. Scand.*, II. 853.7. (1843); BONDS., *Finl. tvaving. Ins.*, 1.234.4. (1861); MALM., *Gøteb. Kongl. Vet. Handl.*, 1863.71. (1863).

*nigritus* GIMM., *Bull. Soc. Imp. Nat. Moscow*, XV. 668. (*nigritis*) (1842) et XX. 2., 172.1. (1847).

*albipes* GIMM., *Bull. Soc. Imp. Nat. Moscow*, XV. 668. (1842).

*dispar* SCHUMM., *Ubers. d. Arb. u. Verand. d. schles. Ges. f. vaterl. kultur*, 1842. 163. (1842).

*coadunatus* ROND., *Nuov. Annal. Sci. Nat. Bol.*, (2). VIII. 346. (*Sep.* 12). (1847), *Dipterol. Prodr.*, II. 190.1. (1857), et *Bull. Soc. Ent. Ital.*, IX. 60. (1877); SCHIN., *Nov. Reise, Dipt.*, 369.103. (1868).

*tarsatus* ROND., *Dipterol. Prodr.*, II. 191.3. (1857).

*substitutus* Lw., *Öfv. Kongl. Vet. Akad. Forhandl.*, XIV., 1857.376.6. (1858) et *Dipterenf. Südaf.*, I. 294.1. (1860); BEZ.,

Ditt. Eritrei., II. 21.75. (1908) et Syrph. æthiop. Mus. Nat. hungarici, 132. (2).5. (*tibialis* var.) (1921).

*dimidiatus* Lw., Berl. Entom. Zeitschr., VII. 308.68. (1863); WILLIST., Bull. Unit. Stat. Nat. Mus., (31), 20. (1886) et Biolog. Centr. Amer., Dipt., III. 5.1. (1891); TOWNS., Psyche, VIII, (259), 140. 2. et (260), 147.2, (1897); ALDR., Catal. N.A. Dipt., 351. (1905).  
*tacchetii* ROND., Atti. Soc. Ital. Sci. Nat. Milano, VIII, 140. (1865).

*varipes* BIG., Annal. Soc. Entom. Fr., (5). X. 150.° (*Orthonevra*) (1880) et (6). V. 249 (*Orthonevra*) (1885).

*auricaudatus* BIG., Annal. Soc. Entom. Fr., (6). III. 1883. 540. 2. (1884); WILLIST., Bull. Unit. Stat. Nat. Mus., (31), 301. (1886).

**DIAGNOSIS:**—Face with a black middle line in both sexes; scutellum entirely black in both sexes.

**DESCRIPTION:**—*Male*: Face from light to dark shining yellow with a black middle line which extends from between the antennæ to the upper mouth-edge; this line is rather widened about its lower part and is produced quite one third of the width of the eye. Pubescence delicate white and equal everywhere except on the middle line. Jowls small with white pubescence which is continued on to the occiput. Vertex shining black, elongate and very pointed in front and possesses inconspicuous blackish pubescence. Eyes touching for a short distance and with short inconspicuous whitish pubescence which has no tendency to run into stripes. Antennæ with the two basal joints black; the rather long third joint which is usually about three times as long as broad is generally black above and yellow below; arista brown, bare and not quite as long as the third antennal joint.

Thorax aeneous-black, shining, and rather coarsely punctate; it is clothed with fairly abundant and erect whitish pubescence, which is whiter and much longer on the pleuræ. Scutellum with a similar pubescence as that of the thorax and without any trace of light colour.

Abdomen shining black, with a punctuation which is coarser on the basal half, but the extreme hind margins of the segments are impunctate and very shining; sometimes it bears orange-red or yellow markings, which colour may extend on to all the segments, except the basal one, such as in the varieties mentioned below. The second segment is longer than the basal, the third longer than the second, the fourth longer than the third, and the fifth is much shorter than any of the four others but is very obvious; the abdo-

men is clothed with very inconspicuous whitish pubescence, which is much longer on the side margins of the basal segment.

Legs bright orange-yellow with the basal two-thirds of the anterior and posterior femora black; the hind tibiæ usually have a dark ring or blotch just after their middle. The hind femora are slightly thickened about the middle, also the basal joint of the hind tarsi is rather swollen; pubescence pale and inconspicuous but fairly long on the posterior tibiæ.

Wings pellucid with the stigma brownish. Squamulæ and halteres yellow.

*Female*.—Very similar to the male; face sometimes blackish but usually yellow at the sides and obscure in the middle. Frons as well as the thorax rather shining bluish-black. Scutellum entirely shining æneous-black without any traces of yellow.

Length from 5 to 6 mm.

This species seems to be rather rare in Cairo and its neighbourhood, but fairly common in the Mariout District, where I have obtained a small series in which the two varieties described below outnumbered the type. My records date from February 4th to July 5th. It is known to occur in Africa, throughout Europe and a large portion of North America, as well as in South America.

*Var. trianguliferus* ZETT., a form in which there is a rather large ferruginous spot on the third segment of the abdomen.

*Var. hæmorrhous* MEIG., another form in which the abdomen is bright red except the basal and the upper part of the second segment. I possess some specimens which have only the basal segment of the abdomen black and the other four segments entirely reddish.

These two varieties seem to be quite as common, if not commoner than the type, but up till now I have only obtained them from the Mariout district, at the same time as the type. Lately I have obtained the type as well as the var. *trianguliferus* in the Wadi Hoff and Wadi Rishrash.

## 2. *P. AEGYPTIUS* MACQ., (Pl. III, figs. 1, 5, 6).

Macq., Dipt. Exot., Suppl.4., 160.2. (1849); BECK., Mitteil. Zool. Mus. Berl., II. 90.126. (1903); BEZ., Ditt. Eritrei, II. 12.1. (1908) et Dipt. Syriaca et Ægypt., 56. (20). 86. (1909).

*DIAGNOSIS*.—Face entirely whitish-yellow in both sexes, scutellum with the tip and often all the lower half yellow in both sexes.

Very similar in colour, markings and size to *P. tibialis*, but easily distinguished from it by the above characters.

*DESCRIPTION:—Male.* Face and frons entirely shining whitish-yellow or yellowish-white, even the upper mouth-edge; mouth and proboscis black; pubescence on the face and frons very short, and inconspicuous. Occiput either entirely covered with silvery white hairs, or yellowish-white hairs on the upper part and white below. Vertex elongate, shining æneous-black, with yellow dust; its pubescence is very short, pale yellow and inconspicuous. Eyes meet for a distance which is shorter than the length of the very short frons, and with rather conspicuous white pubescence which has a tendency to run into stripes, and which leaves the front and the back of the eyes (on the upper part) less conspicuously hairy. Antennæ rather long; the third joint is long, narrow and pointed and is about five times as long as wide; the two basal joints are blackish and the third is usually brownish above, but brownish-yellow beneath and sometimes it is uniformly darker; arista inserted well before the middle of the joint and shorter than the third antennal joint.

Thorax varying from deep black to brassy greenish-black or blackish-æneous and always shining, although rather coarsely punctate; it possesses two very faint dull lines on the front of the disc; pubescence on the disc very short, pale and inconspicuous, but with a tuft of much longer, shining white hairs on the mesopleuræ; scutellum with either its basal half or the basal three-quarters shining æneous-black, but with at least the apex yellow and with short and pale yellow pubescence.

Abdomen varying exceedingly in colour. In some cases entirely black with yellowish-red or reddish isolated spots on the second, third and fourth segments, in others it is yellowish-red or reddish, except the base and the apex obscurely dark, and occasionally the abdomen is entirely reddish except the basal corners; it is rather coarsely punctate, except the extreme hind margins of the segments which are very shining; pubescence entirely pale and inconspicuous, but longer and tufted on the first segment and on the basal corners of the second segment. Hypopygium small, yellowish-brown and apparently free from pubescence.

The two anterior pairs of legs are always entirely yellow or orange-yellow, but the hind legs are variable in pale specimens, being nearly entirely orange, except for a dark brown spot on the femora after the middle, and in darker specimens being orange and black.



Wings pellucid, with the stigma brown or brownish-yellow. Squamulæ yellowish-white. Halteres very pale yellow, with the base dark brown.

*Female*.—Very similar to the male, except the frons is rather shining black.

Length from 6 to 7 mm.

This species, I think, is the commonest and most widely distributed member of its family in Egypt.

It is equally abundant throughout the whole length of the Nile Valley, from Assuan down to the Mediterranean Coast as well as in the desert and it may be found nearly all the year round.

It is known to occur in Syria, North Africa, and it probably occurs along the Mediterranean Coast to Morocco.

The larvæ feed on Aphids (see Page 22).

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## 2. SPILEROPHORIA ST.-FARG. & SERV.

ST.-FARGEAU & AUDINET-SERVILLE, *Encycl. Method.* X. 513 (1825).

*SYNONYMY*:— *Melithreptus* Lw. Programm. Posen, 27 et Isis, VIII. 577. (1840).

*Melitrophus* WALK., *Ins. Britann., Dipt., III.* XXI. (1856).

Fairly long, narrow bodied, small or rather small flies with brilliant yellow markings, which are almost as extensive as the black ground colour. The members of this genus are closely allied and resemble those of the genus *Syrphus*, but they may easily be recognised by the large number of abdominal segments (except in the allied genus *Xanthogramma*), as there are five quite distinct segments in the male, before the very large genitalia and often six or seven are visible in the female before the ovipositor.

The head is of the ordinary *Syrphus* type, except that it is much more protruding below. at the mouth, always mainly and conspicuously yellow, and the hollow below the antennae is much less pronounced. Eyes quite bare. Antennae very simple, with a bare, normal and rather short arista.

Thorax blackish with the side margins more or less conspicuously yellow or orange, at least from the humeri to the suture and then on the postalar calli; the pleurae are yellow on all the mesopleurae, pteropleurae, metapleurae, and the upper part of the sternopleurae, as well as the prothorax; scutellum always conspicuously yellow. These characters also show that *Xanthogramma* is the nearest ally.

Abdomen rather long and narrow, (especially in *S.scripta*) with yellow or orange markings, which are somewhat peculiar to the genus, and with remarkably clubbed male genitalia. I agree with Professor Bezzi's opinion that these require special attention and study in the future, as they probably represent more substantial specific differences than the yellow markings on the abdomen, colour of legs etc. which are liable to great local variation and up till now have constituted the most valid differences between many species.

Legs very simple, yellow and without any unusual shape or any very conspicuous pubescence. Wing venation very similar to

that of *Syrphus* although a difference may be detected by a trained eye in the more pronounced undulation of the turned up portion of M 1+2.

This genus shows a distinct connection with our *Xanthogramma ægyptium*, although in Europe it seems to be well separated by its distinct shape and markings.

*Sphærophoria*, as a restricted genus, occurs in North Africa, India, Ceylon, Australia, Japan, North and South America, Siberia, Greenland, Madeira, Canary Islands, Asia Minor, Java, Sumatra, North America, Marquesas and Tahiti Islands, and throughout Europe.

The metamorphoses of a few species are known. The larva and pupa of *S. scripta*, which were found among Aphids in April and May, have been described by Rœsel (Ins. Belust. II, 1749 Musc. 31 T. VI.). Bouché (Naturg. d. Ins. 1834, 51, T.V. f. 4-6) describes the developmental stages of *S. menthastri* (*taeniata*) and states that the larvæ were found among Aphids on Compositæ. Zetterstedt (Dipt. Scand., II. 1843, 766) says that he found larvæ and pupæ of *S. scripta* as well as those of *S. menthastri*, the larvæ of the latter feeding on Aphids on *Vicia faba*. Lundbeck (Dipt. Dannica, V. 340. 1916) has also found the larva of *S. scripta* feeding on Aphids and I have myself found the larvæ of *S. flavicauda* feeding on an Aphis on *Centaurea ægyptiaca*.

Lundbeck describes the larva of *S. menthastri* as being "of the usual shape of a *Syrphus* larva ; it is corrugated above, the dermis is finely shagreened and there are very small bristles on the dorsum and at the sides, arranged quite as in *Syrphus* ; on the ventral side there are slight transverse swellings ; the posterior spiracular process is not quite short, black, with a longitudinal dividing furrow above and below and the apical cleft with the points a little diverging. The larva is light green with two whitish longitudinal dorsal stripes. Length from 7 to 10 mm. The pupa is broad and rounded in front and attenuated behind and thus drop-like; the spiracular process is as in the larva; it is green during the first part of the development, later the imago shines through and the empty puparium is whitish. Length about 7 mm."

The larvæ are aphidiphagous. Verrall states that *S. flavicauda* is in some way associated with the garden Asparagus and that an allied genus *Mesograpta* (*M. polita*, Say) has been proved to eat pollen in the larval stage.

At the period of pupation the larva attaches itself by its posterior extremity to a leaf or stalk.

**SYNONYMY:**—I agree with what Verrall says as regards the synonymy of this genus, and entirely support his statement that

there is not the slightest reason for changing the name *Sphærophoria*, for which Læw in 1840 suggested the name *Melithreptus*, a change which has been adopted by Becker. Læw's reason for changing the name *Sphærophoria* was his impression that two other similarly named genera, *Sphærophora* and *Sphærophorus* were already established. Verrall, however, could not trace any genus *Sphærophora* while *Sphærophorus* was created by Walzl for a beetle, ten years after *Sphærophoria* has been established. Moreover this beetle had already been described a year earlier as *Thorictus*. In addition, the name *Melithreptus* had also been suggested by Vieillot in 1816, for a genus of birds, and consequently Haliday suggested the name *Melitrophus* in Walker's *Insecta Britannica*, Diptera.

### TABLE OF EGYPTIAN SPECIES.

- 1 (2) Thorax with its side margins continuously yellow; abdomen very elongate, (Pl. III, figs. 9 and 11) ..... 1 *scripta* L.
- 2 (1) Thorax with its side margins yellow only above the suture; abdomen small and moderately long, (Pl. III, figs. 7, 8, 10)..... 2 *flavicauda* ZETT.

#### 1. S. SCRIPTA L. (Pl. III, figs 9 & 11)

L., Syst. Nat., X. 549.42. (*Musca*) (1758) et Fauna Suec., 449. 1820. (*Musca*) (1761); ROESEL, Insect. Belust., II. Musc. f. VI. (—) (1764); O.F. MULLER., Fauna Ins. Friedrichsd., 82.723. (*Musca*) (1764) et Zool. Dan. Prodr., 172.2013. (*Musca*) (1776); FABR., Syst. Entom., 772.45. (*Syrphus*) (1775) Spec. Ins., II. 434.62 (*Syrphus*) (1781), Entom. Syst., VI. 308.113. (*Syrphus*) (1794) et Syst. Antl., 252.17. (*Scæva*) (1805); VILL., Entom. Linn., III. 449. 103. (*Musca*) (1789); GMEL., Syst. Nat., V. 2876.54. (*Musca*), (1790); CEDERH., Faunæ Ingr. Prodr., 307.965. (*Syrphus*) (1798); SCHELL., Genres Mouch. Dipt., 52. t.X.f. 2. (*Syrphus*) (1803); LATR., Dict. Hist. Nat. Deterv., XXIV. 195.568. (*Syrphus*) (1804) et Gen. Crust. Ins., IV. 25. (*Syrphus*) (1809); MEIG., System. Beschreib., III.324.73. (*Syrphus*) (1822); ST. FARG. & SERV., Encycl. Méthod., X. 513. (1825); MACQ., Rec. Soc. Sci. Lille, 1828.218.l.t.II.f.3. (1829),

Suit. à Buff., I. 551.1. (1834), in WEBB & BERTH., Hist. Nat. Iles Canar., Entom., Dipt., 109.52. (1838) et Explor. Scient. Alger., Zool., III. 470.174. (1849); BRULLÉ, Expéd. Sci. de Morée, III. 1., 310.672. (1832); ZETT., Ins. Lapp., Dipt., 605.28. (*Scava*) (1838) et Dipt. Scand., II. 766.1. (1843), VIII. 3157.1. (1849) et XI. 4305.1. (1852); Lw. Programm. Posen, 1840.37.1. et var 2. t., f. 52. (*Melithreptus*) (1840), Isis 1840. VIII 578.1. et var. 2. t., f. 52 (*Melithreptus*) (1840), Verh. zool.-bot. Ver. Wien, VII. 80.35. (*Melithreptus*) (1857) et Wien. Entom. Monatschr., II. 108.11. (*Melithreptus*) (1858); WALK., List Dipt. Brit. Mus., III. 592. (*Syrphus*) (1849), et Ins. Britann., Dipt., I. 299.1. (*Melithreptus*) (1851); ROND., Dipterol. Prodr., II. 112.1. (1857) et Bull. Soc. Ent. Ital., IX. 61. (1877); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 369.1. (*Melithreptus*) (1857) et Fauna Austr., Dipt., I. 316.3. (*Melithreptus*) (1862); CURT., Farm. Ins., 82. (1860); BONDS., Finnl. tvaving. Ins., I. 257.1. (1861); MALM., Gøeteb. Kongl. Vet. Handl., 1863.47. (1863); v. d. WULP, Tijdschr. v. Entom., XXVI. 8.43 (*Melithreptus*) (1883); Kow., Wien. Entom. Zeitg., IV 134. (*Melithreptus*) (1885); WILLIST., Bull. Unit. Stat. Nat. Mus., (31), 107. (1886); NEUHAUS, Dipt. Marchica, 103.1. (*Melithreptus*) (1886); PIERRE, Bull. Soc. Saone, IV. 40. (*Melithreptus*) (1887); STROBL, Mittheil. Naturwiss. Ver. Steiermark, XXIX. 1892.162. (*Melithreptus*) (1893); GIRSCHN., Illustr. Wochenschr. f. Entom., II. 568. t. III. f. 16. (*Melithreptus*), (1897); VERR., Brit. Fl., VIII. 428. l. f. 311-314. (1801); MEIJ., Zool. Jahrb., Abth. Anat., XV. 679. (*Melithreptus*) (1902); VILLEN., Feuil. Jeun. Natural., XXXIII. 147 (1903); KETEL., Progr. Pasewalk., 9 obs (*Melithreptus*) (1903); LAMPA, Entom. Tidskr., XXV. 212. t. I. f. 7. (1904); ALDR., Catal. N.A. Dipt., 373. (1905); BEZ., Ditt. Eritrei II. 14.55. (1908) et Dipt. Syriaca et Ægypt., 21.57. 95. (1909); BECK., BEZ., KERT. u. STEIN, Catal. Palæarkt. Dipt., III. 76. (1907); KERT., Catal. Dipteror., VII. 140. (1910); LUNDB., Dipt. Danica, V. 342-345, f. 129, 130. (1916).

*SYNONYMY*:—*libatrix* Scop., Entom. Carn., 346.933 (*Musca*) (1763); VILL., Entom. Linn., III. 521.283. (*Musca*) (1789); SCHIN., Verh. zool.-bot. Ver. Wien, VI. 416.933 (*Syrphus*) (1856) et VII. 448. (*Syrphus*) (1857).

*gemmatus* Scop., Entom. Carn., 356.965. (*Conops*) (1763); SCHIN., Verh. zool.-bot. Ver. Wien, VI. 418.965. (? *gen*) (1856) et VII. 448. (*Melithreptus*) (1857).

*fasciata* O.F. MULLER, Fauna Ins. Friedrichsd., 85.757 (*Musca*) (1764), et Zool. Dan. Prodr., 173.2035. (*Musca*) (1776); VILL., Entom. Linn., III. 546.379 (*Musca*) (1789).

*menthastri* DEG., Mem. p. serv. l'Hist. Ins., VI. 119.10. (*Musca*) (1776).

*invisito* HARR., Expos. Engl. Ins., 83. t. XXIV f. 31. (*Musca*) (1782).

*menthastri* FALL., Dipt. Suec., Syrph., 48.24. pp. (*Scæva*) (1817).

*?limbata* MACQ., Rec. Soc. Sci. Lille, 1828, 220.6. (1829) et Suit. à Buff., I. 552.6. (1834); MEIG., System. Beschreib., VII. 139.118. (*Syrphus*) (1838); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 372.16. (*Melithreptus*) (1857); MALM., Gøeteb. Kongl. Vet. Handl., 1863.49. (1863).

*?sinuata* MACQ., Suit. à Buff., I. 553.10. (1834); MEIG., System. Beschreib., VII. 139.120. (*Syrphus*) (1838); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 372.18. (*Melithreptus*) (1857).

*?analis* MACQ., Suit. à Buff., I. 553.9. (1834); MEIG., System. Beschreib., VII. 139.119. (*Syrphus*) (1838); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 373.19. (*Melithreptus*) (1857).

*Var. dispar* Lw., Programm. Posen, 1840.37.5.t. 53-54. (*Melithreptus*) (1840) et Isis, 1840. VIII. 578.5. t., f. 53-54. (*Melithreptus*) (1840); GIMM., Bull. Soc. Imp. Nat. Moscou, XX. 2., 174.1. (*Melithreptus*) (1847); ZETT., Dipt. Scand., VIII. 3157. 1-2. (1849); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 370.2. (*Melithreptus*) (1857) et Fauna Austr., Dipt., I. 317. (*Melithreptus*) (1862); BONDS., Finl. tvaving. Ins., I. 258.2. (1861); PALMA, Annal. Accad. Asp. Natur. Nap., (3). III. 57.92 (1863); MALM., Gøeteb. Kongl. Vet. Handl., 1863.47. (1863); ROND., Atti. Soc. Ital. Sci. Nat. Milano, XI. 26. (1868); Kow., Wien. Entom. Zeitg., IV. 134. (*Melithreptus*) (1885); NEUHAUS, Dipt. Marchica, 113.7. (*Melithreptus*) (1886); BECK., Berl. Entom. Zeitschr., XXXIII. 190.191. (*Melithreptus*) (1889); STROBL, Mittheil. Naturwiss. Ver. Steiermark, XXIX. 1892.162. (*Melithreptus*) (1893); VERR., Brit. Fl., VIII. 431. (1901); WILLEN., Feuil. Jeun. Natural., XXXIII. 147. (1903).

*larandula* MACQ., Rec. Soc. Sci. Lille, 1828.220.5. (1829) et Suit. à Buff., I. 552.5. (1834); MEIG., System. Beschreib., VII. 138. 117. (*Syrphus*) (1838); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 372. 15. (*Melithreptus*) (1857).

= *scripta* ZETT., Dipt. Scand., II. 766. 1. *var. b.* (1843).

*Var. nigricoxa* ZETT., Dipt. Scand., II. 767.2. (1843) et VIII. 3158.2. (1849); ROND., Dipterol. Prodr., II. 112.2. (1857); BONDS., Finl. tvaving. Ins., I. 258.3. (1861); MALM., Gøeteb. Kongl. Vet. Handl., 1863.47. (1863); Kow., Wien. Entom. Zeitg., IV. 134. (*Melithreptus*) (1885); STROBL, Mittheil. Naturwiss. Ver. Steiermark, XXIX. 1892.162. (*Melithreptus*) (1893); VERR., Brit. Fl., VIII. 431. (1901); WILLEN., Feuil. Jeun. Natural., XXXIII. 147. (1903).

*Var. strigata* STAEG., Naturhist. Tidsskr., (2). I. 362.31. (1844); ZETT., Dipt. Scand., VII. 3159. 2-3. (1849); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 370.3. (*Melithreptus*), Fauna Austr., Dipt., I.

316.2. (*Melithreptus*) (1862) et Nov. Reise, Dipt., 347.19. (*Melithreptus*) (1869); BONDS., Finl. tvaving. Ins., I. 258.4. (1861); Kow., Wien. Entom. Zeitg., IV. 134. (*Melithreptus*) (1885); NEUHAUS, Dipt. Marchica, 113.6. (*Melithreptus*) (1886); STROBL, Mittheil. Naturwiss. Ver. Steiermark, XXIX. 1892.162. (*Melithreptus*) (1893), Wien. Entom. Zeitg., XVIII. 145.97. (*Melithreptus*) (1899) et Wissensch. Mittheil. Bosn. u. Herceg., VII. 591. (*Melithreptus*) (1900); LUNDB., Vidensk. Meddel., 1898. 304.96. (*Melithreptus*) (1898); VERR., Brit. Fl., VIII 432 et 433. (1901); VILLEN., Feuil. Jeun. Naturel., XXXIII. 147. (1903).

= *philanthus* SCHIN., (*nec* MEIG.), Verh. zool.-bot. Ver. Wien, VII. 371.8. (*Melithreptus*) (1857).

= *picta* HOLMGR., Cefv. Kongl. Vet. Akad. Forhandl., XXIX. 100 (1872).

**DIAGNOSIS:**— The largest and longest species of this genus. Thorax with its side margins continuously yellow; abdomen very elongate.

**DESCRIPTION:**— *Male:* (Pl. III, fig. 11), Face entirely shining yellow, sometimes with a greenish-yellow tinge, and bearing very inconspicuous, short, pale pubescence; jowls pale yellow, with whitish pubescence, which extends up the back of the head and becomes conspicuously white and coarse at the widening about the middle of the occiput, caused by the incurved margin of the eye; above this, and on the top of the occiput, the pubescence is pale yellow to tawny. Vertex rather shining black with black hairs on the front part, which are curved forward, and with tawny hairs on the hind part. Frons rather produced, entirely yellow, with inconspicuous yellow pubescence. Eyes touching for about eight or nine facets. Antennæ orange-yellow, usually darkened above the third joint, and occasionally with the apex and the upper part dark brown or blackish; on the dorsal surface of the two basal joints there are some minute black bristles; arista brown, quite bare, gradually tapering, and not quite as long as the three joints of the antennæ together.

Thorax moderately shining or even dull, with traces of two broad faint grey lines close together on the front half of the disc; the side margins are all yellow from the humeri to the scutellum, but more broadly and clearly yellow on the front half; pubescence brownish-yellow and sometimes pale yellow, paler and longer on the sides and on the pleuræ; scutellum dull-yellow with rather long pale yellow pubescence and in some specimens, a few black hairs near the apex.

Abdomen dull black or brownish-black, rather shining near

the base and less so near the apex, and with yellow or orange markings ; it is at least five times as long as its broadest part, which is on the second segment, after which it gradually narrows to the end of the third segment and then very slightly widens to the genital knob. The extreme sides of the basal segment are yellow up to the entire and rather broad yellow band which crosses the second segment about its middle ; the third segment has also an entire yellow or orange band which crosses the segment about its middle, but which is much broader than the one on the second segment ; the fourth segment is brownish-orange with a black spot on the middle of the upper margin, which spot extends down vertically for about one third of the segment, and laterally, rather broadly to the side margins ; the lower margin of the fourth segment has a similar, but much larger spot which also extends laterally to the side margins and up a dorsal line for about half the segment ; however, all the markings on this segment are usually rather vague and variable in size and shape ; the fifth segment has a black dorsal line on the basal three-quarters, with a pair of black spots outside the end of this line, and, with a black (sometimes vague) elongate spot on each side of the basal margin ; after this comes the short and small orange sixth segment followed by a large shining orange cap, with two round black spots over the ball-like genitalia, near the base of which are two brown spots. Very often the black and orange markings of the abdomen run together, thus rendering the orange more reddish and leaving the black markings less defined, especially on the third and fourth segments. Pubescence on the abdomen rather short and mainly following the ground colour, except on the two basal segments where it is long and pale. Venter with rather indistinct alternate bands of yellow and brownish-black ; its pubescence is mainly pale. Hypopygium extremely large, prominent, nearly bare and consisting of a large globular mass which is mostly under the fifth segment, at the end of which is a pair of broad lamellæ with shagreened ends, which bear tufts of long pale hairs ; still further concealed are numerous processes with which no one is perfectly acquainted.

Legs almost entirely orange, very simple with short inconspicuous pubescence, which is mostly pale on the front legs, and blackish on the hind legs ; middle femora always with a distinct, more or less black ciliation on the ventral surface ; hind coxæ with long pale yellow hairs ; on nearly all the rest of the hind legs, except for the trochanters which are nearly bare, there are small black bristles which are much denser and crowded on the tibiæ. The tarsi are thin and rather darkened on the third, fourth



and fifth joints and possess minute black bristles on the dorsal surface and a short but very tufted tawny-yellow pubescence on the ventral surface.

Wings pellucid; with the extreme base, the stigma and the subcostal cell yellowish. Squamulæ and their fringes pale yellow, and the margins dark yellow. Halteres yellow, yellowish-brown or orange-yellow.

*Female:* (Pl. III, fig. 9). The shape of the abdomen is more like that of the narrow-bodied species of *Syrphus* or *Xanthogramma*, from which the yellow side-margins of the thorax and the yellow markings of the pleuræ at once distinguish it.

Frons brightly shining black on the upper half and down about the middle third to nearly the base of the antennæ, the sides of this part being yellowish and shining; there is a peculiar faintly raised triangle, extending outwards from the antennæ to the eyes, below which the upper part of the face has a faint greenish tinge; the pubescence on the upper part of the frons is blackish, pale below, and mostly erect.

Thorax with a rather shorter pubescence than in the male. Abdomen rather shining, about four times as long as its broadest point, which is usually about the base of the third segment, from which it very gradually narrows to the end of the sixth segment; the side margins of the abdomen are entirely yellow and in typical *S. scripta* with entire yellow bands on the second, third and fourth segments, of which the band on the second segment is the narrowest, and the band on the fourth segment is emarginate in the middle, behind; the fifth segment has the basal corners and a dorsal line black, as well as two large black spots on the hind margin, which are rather broadly connected with the dorsal line; the sixth segment has a brownish-black spot on the middle of the base, and two smaller ones on the hind margin; the seventh segment is brownish-black with orange-yellow sides; pubescence mainly following the ground colour, short, except about the basal part and the sides.

Length from 11 (male) to 9 (female) mm.

This species, as well as all those belonging to this genus, are liable to great variations, especially as regards the abdominal markings, such as shape, interruption and sharpness of definition of the yellow abdominal bands, as well as the colour of the legs. Out of ten specimens which I possess, six males and four females (which I believe to be the only ones existing in collections from Egypt) there are not two males exactly alike as regards the abdominal markings, and of the four females, three are very dark forms, possessing a black line down the middle of the face, the

antennæ blacker on the dorsal surface and at the apex, and with the three yellow bands of the second, third and fourth segments of the abdomen very narrow and rather widely interrupted in the centre, and on the sixth segment the three black spots almost cover it, so that the specimen is almost identical with the *var. strigata* of Stæger.

*S. scripta* is a rare species and although it has been recorded from North Africa (Ethiopia) apparently it has never previously been found in Egypt. The small series which I possess, have been captured at Marg (near Cairo), Kerdacé (North East of the Ghizeh Pyramids) and one female from the Wadi-Hoff. My dates extend from February to June. It is known to occur in Asia Minor, Canary Islands, Japan, North and South America, and throughout Europe.

## 2. *S. FLAVICAUDA* ZETT. (Pl. I, fig 8 & Pl. III, figs 7, 8 & 10)

ZETT., Dipt. Scand., II. 771.6. (1843) et VIII. 3161.6. (1849); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 372.11. (*Melithreptus*) (1857); PALMA, Annal. Acad. Aspir. Natur. Nap., (3). III. 58.94. t. f. 9-12. (1863); ROND., Atti. Soc. Ital. Sci. Nat. Milano, XI. 25. (1868); VERR., Brit. Fl., VIII. 441.3. f. 315-317. (1901); BECK., BEZ., KERT. u. STEIN, Katal. Palæarkt. Dipt., III. 73. (1907); BEZ., Dipt. Syriaca et Ægypt., 57. (21) 96. (1909); KERT., Catal. Dipterior., VII. 135. (1910); LUNDB., Dipt. Danica, 349-352. (1916).

*Var. calceolata* MACQ., Dipt. Exot., II. 2., 91.8. t. XVI. f. 1. (*Syrphus*) (1842); BLANCH. in GAY: Hist. fis. y polit. de Chile, Zool., VII. 411.6. (*Syrphus*) (1852); PHIL., Verh. zool.-bot. Ges. Wien, XV. 746. 6. (*Syrphus*) (1865); v.D. WULP, Notes Leyden Mus., IV 80. 12. (*Syrphus*) (1882) et Tijdschr. v. Entom., XXV. 136. 32. (*Syrphus*) (1882); WILLIST., Trans. Amer. Entom. Soc. Philad., XIII. 311. (*Syrphus*) (1886);? GIGL-TOS., Mem. R. Accad. Sci. Nat. Torino, (2) XLIII. 351. 87. (1893); BECK., BEZ., KERT. u. STEIN., III. 73. (1907); BEZ. Ditt. Eritrei, II. 14. 54. (1908); KERT., Catal. Dipterior., VII. 198. (*Syrphus*) (1910).

*Var. nitidicollis* ZETT., Dipt. Scand., VIII. 3163. 8-9 (1849) et XIII. 6009. 8-9 (1859); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 372. 10. (*Melithreptus*) (1857) et Fauna Austr., Dipt., I. 318. (*Melithreptus*) (1862); BONDS., Finl. tvaving. Ins., I. 260. 10. (1861); MALM., Goeteb. Kongl. Vet. Handl., 1863. 49. (1863); JAROSCH., Trudy Kharkoff, XI. 371. 58. (*Melithreptus*) (1877); Kow., Wien. Entom. Zeitg., IV. 133. (*Melithreptus*) (1885); NEUHAUS, Dipt. Marchica, 113. 9. (*Melithreptus*) (1886); BECK.,

STROBL., Mittheil. Naturwiss. Vet. Steiermark, XXIX. 1892. 163. (*Melithreptus*) (1893); VERR., Brit. Fl., VIII. 445. (1901); Villen., Feuil. Jeun. Natural., XXXIII, 147. (1903); BECK., BEZ., KERT., u. STEIN, Katal. Palæarkt. Dipt., III. 73. (1907); KERT., Catal. Dipteror., VII. 135. (1910).

= *melissæ* ZETT., Dipt. Scand., II. 770. 5. (female) (1843).

= *tæniata* WALK., (*nec* MEIG.), Ins. Britann., Dipt., I. 299.3. (*Melithreptus*) (1851).

**DIAGNOSIS:**—Thorax with its side margins yellow only above the suture; abdomen small and moderately long.

**DESCRIPTION:**—*Male*, (Pl. III, fig. 7), Face yellow to yellowish-brown, with the sides usually pearly-white and entirely shining; down the middle, the central knob is often blackish, sometimes with a dark middle line extending downwards to the mouth-edge, while the exact margin of the mouth is usually narrowly black on the front part; pubescence on face very short and inconspicuous; the lower margin of the mouth runs back horizontally to the lower margin of the eyes and is not in the least descending; the jowls are very small with white pubescence which extends up the occiput; this pubescence becomes rather conspicuous and coarse where the margin of the eye is arched inwards, and consequently leaves a much wider space on the occiput visible; above this the occiput becomes much darker and its pubescence is longer and ranging from yellow to dark-tawny; vertex rather large, bright æneous-black and bearing a dark pubescence; frons of the same colour as the face, not much produced, with short yellow pubescence, but on the top occasionally there are a few black hairs. Eyes reddish to reddish-brown or black, touching for about eight facets. Antennæ dull orange, blackish on the dorsal side and at the apex; arista quite bare, not quite as long as the antenna; it is gradually tapering and obscurely orange at the base, but mostly blackish.

Thorax either quite dull or very shining æneous, with a pair of broad greyish longitudinal lines on the disc near the base, these stripes varying somewhat in distinctness; it is yellow or greenish-yellow on the humeri and on the side margins down to the base of the wings, after which the yellow is interrupted until the postalar calli, which are more or less orange; the prothorax and nearly all the mesopleuræ, pteropleuræ and metapleuræ are yellow, and there is a large yellow spot at the top of the sternopleuræ; the pubescence is rather long, abundant, pale yellow to tawny, but very inconspicuous; the scutellum is dull orange except

the basal corners which are black; its pubescence is fairly abundant, long and entirely yellow.

Abdomen shining black with extensive orange markings; it is about three times as long as its broadest part, which is usually on the base of the fifth segment, and is very club-shaped as it narrows from its base to the middle of the third segment, after which it rapidly widens to the fifth segment and spreads over the very large genitalia; the second segment has an orange band which is usually well interrupted in the middle and which starts from the side margins near the lower end of the segment, but slopes upwards to the middle of the disc; sometimes this band is continuous; on the third segment the band is much broader and sometimes slightly interrupted in the middle, and is situated higher up than the middle of the segment, so that its upper margin is close to the base of the segment; on the fourth segment the band is very similar in shape to that on the previous one but owing to the larger size of the segment the band is much longer and larger; however, very often the increase of the yellow colour makes the segment appear orange, except for two black elongate spots near the lower margin and two others in the centre of the segment, one of which, small and round, touches the base, and the other more elongate is near the lower margin; on the fifth segment the black portion is reduced to two elongate blackish spots near the basal corners and a fairly broad dorsal line which extends from the base to about two-thirds of the segment and at the end of which, on the sides, are two small, more or less distinct, roundish spots. Pubescence on abdomen rather inconspicuous but long erect and mostly pale about the basal corners and shorter, but also pale, on the side margins; it is short, adpressed and blackish on the disc. Venter orange and black and the black markings of the abdomen, when seen from below, never quite reach the side margins; pubescence shorter and much less conspicuous than on the dorsum. Hypopygium very large, asymmetrical and usually orange with spots on the sides which may either be distinct (three small ones on the left and one larger on the right) or practically absent; the genitalia, which consist of a very large ball under the fifth segment, are continued under the fourth by a pair of large lamellæ, which are rather hairy, especially at their apices.

Legs yellow to orange, quite simple in shape, with darker places which are liable to excessive variations in different individuals. The front pair of legs is usually entirely yellow or orange, but the middle and hind pairs vary considerably, as they may be anything from orange with tiny black bristles on the tarsi, to almost entirely blackish with tiny yellow bristles on the tarsi; and

dark specimens may have orange tarsi and pale specimens dark tarsi. The pubescence on the front femora is either entirely yellow or with the minute hairs black below; behind the middle femora the pubescence is longer and black from the trochanters to the end of the tarsi; except on the inside of the hind tibiæ on the apical half.

Wings rather greyish, pellucid, with the extreme base orange and the stigma yellowish-brown. Squamulæ with their margins and fringes yellowish. Halteres pale yellow.

*Female*, (Pl. III, fig. 8), Rather similar to the male except for the shape and markings of the abdomen. The frons is moderately broad at the vertex and very shining æneous for the entire width of the upper half, which is continued on about the middle third almost to the antennæ; its pubescence is short, inconspicuous and follows the ground colour.

Abdomen more even in shape, less clubbed and not so constricted about the middle. The orange markings on the segments are very variable; the side margins of the first segment are yellow and those of the second segment are very similar to those in the male but rather broader and sometimes interrupted; the band on the third segment is also either entire or interrupted, and arched from near the hind margin at the sides, to near the front margin in the middle; the band on the fourth segment is similar but broader and hence occupies more of the segment and when it is interrupted in the middle it has small projections near the middle, both above and below; on the fifth segment the band has these projections increased so that the segment is all orange except for a black dorsal line, the basal corners, and the two large corners of the hind margin; the sixth segment is entirely orange except for a broad black dorsal line and two round brownish-black spots on the sides and at the end of the dorsal line. Pubescence also pale about the basal corners and about the sides down to the end of the third segment; below this it is longer than in the male and entirely blackish.

Length from 8 to 6 mm.

*Var. calceolata* MACQ., (Pl. III, fig. 10), I do not consider this to be anything but a dark variety of the above species in which the femora are considerably darker and the abdomen with the orange markings less extensive, thus leaving the abdomen darker but with the orange markings also greatly varying in almost every individual. This variety seems to correspond almost exactly with the European *var. nitidicollis* ZETT. of *S. flavicauda*. In some of my specimens the abdominal markings of the male run together, i.e. the orange

markings become obscure reddish-orange and more extended, so that the contrast between the orange and the black becomes blurred.

Almost all the species of this genus have a strong tendency to form local races or forms, of which probably large numbers have been described as distinct species, and my belief is that until a serious study and comparison of the male genitalia is completed, none of the other small species in this difficult genus can be described accurately or named with certainty ; moreover, it follows that until such a point is reached, it is less confusing and quite as correct to collect together all the various names (of which there are no doubt some, if not many, synonyms) under the headings of a very few species, although some mistakes may occur.

This species as well as its dark form is quite common and very widely distributed in Egypt; my records date from December to the end of October. *S. flavicauda* is also common and very widely distributed in Europe and in addition has been recorded from Syria and its *var. calceolata* from North Africa (*Ethiopia*), Chile, ? Mexico and Europe (*nitidicollis*).

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### 3. XANTHOGRAMMA SCHIN.

SCHIN., Wien. Entom. Monatschr., IV. 215. (1860).

*SYNONYMY*:—*Sinosyrphus* BIG., Annal. Soc. Entom. Fr., (6). II. Bull. LXVIII. 4. (1882).

Moderately large *Syrphus*-like species which possess conspicuous yellow or orange markings on the sides of the thorax and the colours on the whole are strongly contrasted on all parts of body. It is very similar to *Syrphus* but is distinguished by the well defined orange markings which extend to distinct side lines on the thorax, and to yellow or orange spots on the pleuræ. Face shining, waxy yellow, practically devoid of pubescence, and in the male, decreasing in width, as it descends. Eyes quite bare. Antennæ with the second joint very short, and the third joint bearing a rather short, bare arista.

Abdomen rather narrow, with the side margins almost parallel (although in the European species it may be broad and marginate); the yellow markings are very conspicuously contrasted against the black ground colour; pubescence short.

Legs simple, slender and almost bare.

Wings with a venation similar to that of *Syrphus*.

Not much is known about the metamorphoses of this genus; Verrall states that the larva has been bred from heaps of turf, but I think that it is very likely that our only Egyptian species is aphidiphagous like the members of its closely allied genera, *Syrphus* and *Sphærophoria*.

#### 1. X. AEGYPTIUM WIED. (Pl. IV. fig 7).

WIED., Aussereurop. Zweifl., II. 133.29. (*Syrphus*). (1830);  
Lw., Öfv. Kongl. Vet. Akad. Forhandl., XIV. 1857.378.19.  
(*Syrphus*) (1858), Dipterenf. Sundafr., I. 306.4. (*Syrphus*) (1860)  
et in PETERS: Reise n. Mosambique, Zool., V. 17. (*Syrphus*) (1862);  
WALK., The Entom., V. 274.49. (*Syrphus*) (1871); VERR., Trans.  
Entom. Soc. Lond., 1898.414.4. (*Syrphus*) (1898); RICARDO, The  
Nat. Hist. of Sokotra, 369.21. (*Syrphus*) (1903); BECK., Bez., KERT.  
u. STEIN, Katal. Palæarkt. Dipt., III. 73. (*Sphærophoria*),

(= *scutellare* FABR.) (1907); KERT., Catal. Dipteror., VII. 150. (= *scutellare* FABR.) (1910); Bez., Ditt. Eritrei, II. 14. (= *scutellare* FABR.) (1908), Ditt. raccolti d. Leo. Fea, Ia. 10.11., (409), (410), 8. (1912), Syrph. Ethiop. Region, 36.37.31. (1915) et Syrph. æthiop. Mus. Nat. hungarici, 138 (8) 25. (921).

*SYNONYMY*:—*longicorne* MACQ., Dipt. Exot., II. 2., 94.13. t.f. 5. (*Syrphus*) (1842); BECK., Mitteil. Zool. Mus. Berl., II. 84. 121. (*Syrphus*) (1903).

?*fuscotibiale* MACQ., Dipt., Exot., II. 2.95.14. t. XVI. f. 4. (*Syrphus*) (1842).

?*nasatum* MACQ., Dipt. Exot., II. 2. 96.15. t. XVI. f. 6. (*Syrphus*) (1842).

*natalense* MACQ., Dipt. Exot., suppl. I. 134.28. (*Syrphus*), (1846); BIG., Annal. Soc. Entom. Fr., (3). III. 435. (*Syrphus*) (1859).

?*felix* WALK., Insecta Sanders., Dipt., I.229. (*Syrphus*) (1852); Lw. Dipterenf. Südafr., I. 303.4. (*Syrphus*) (1860).

*brachypterum* THOMS., Eugenes Resa, Dipt., 496.86. (*Syrphus*) (1869).

~~*Pfeifferi* BIG., Annal. Soc. Entom. Fr., (6). IV. 89.5. (*Syrphus*) (1884).~~

*senegalensis* GUÉR., Iconogr. d. Regne. Anim., Ins., 545. t. XCIX. f. 3. (*Syrphus*) (1835).

*DIAGNOSIS*:—This is one of our most elegant and handsome Syrphids and it may be easily distinguished by the strong spine on the hind trochanter in the male, by the parallel sides of the abdomen, and its bright contrasted colours.

*DESCRIPTION*:—*Male*, (Pl. IV, fig. 7 & Pl. II, figs. 5 & 6). Face and frons entirely clear waxy yellow with a very short and pale pubescence; vertex shining black, elongated and possessing very short tawny hairs; occiput covered with tawny-yellow dust and pubescence which are tawny-yellow above and gradually get paler until they become pure silvery-white below. Eyes bare and touching for a distance equal to about the length of the frons. Antennæ reddish-yellow or reddish-brown with the dorsal side of the three segments brownish; the two basal segments bear numerous small black bristles; arista rather short, bare and brownish-yellow.

Thorax shining æneous-black with bluish or greenish sheen and with broad, conspicuous yellow side-lines which extend from



near the base to the postalar calli ; there is a large elongate light yellow spot on the mesopleuræ, at right angles to the side lines of the thorax, and a small yellow spot on the sternopleuræ in a straight line with the elongated spot above it; pubescence on the thorax is dense blackish-brown, but rather short and inconspicuous ; it is longer and tawny on the sides and still longer and paler on the pleuræ. Scutellum dull yellow with pale hairs on the disc, but with a row of even and longish yellow hairs on the margin.

Abdomen elongate, almost as wide as the thorax and with the side margins almost parallel; it is dull brownish-black but shining on the lower margins of the segments and with conspicuous yellow or orange-yellow bands which extend over the side margins. The basal segment is shining black and possesses two yellow, roundish, lateral spots, which extend only a little way on the dorsum ; the second segment possesses a broad orange-yellow transverse band, which is nearly as wide as half the length of the segment and situated in the middle of the segment ; this band is more or less deeply constricted in the centre and sometimes interrupted ; the orange-yellow band on the third segment is quite continuous, as wide as half the length of the segment, and is situated on the upper half (i.e. its upper margin near the basal margin of the segment) ; the fourth segment has a yellow hind margin and an uninterrupted yellow band which occupies exactly the upper half (i.e. from the upper margin to the middle of the segment); in these two last segments, the dark background is often much faded, and gives the effect of the colours running together, and hence the contrast is much less conspicuous than in the second segment ; the fifth and sixth segments are reddish-brown and sometimes the upper margin of the fifth segment is dark brown with a yellowish hind margin ; pubescence on the abdomen very short, inconspicuous and mainly following the ground colour except on the first segment and the upper half of the second segment, where it is longer and very pale.

Venter pale yellow and very transparent on the three basal segments where the dark background of the dorsum shows through; on the four apical segments it is brown or dark brown with darker places ; on the second and third segments there are two median, oval, brown or blackish spots, which are situated on the lower half of the segment, and the spot on the second segment is larger than the one on the third. Hypopygium dark reddish-brown and rather shining ; pubescence on venter very scarce, short, pale and inconspicuous.

Legs entirely yellow except the front coxæ, the three middle joints of the front tarsi and the three apical joints of the

hind tarsi which are dark brown or blackish ; there is also a broad dark brown ring on the hind femora, near the apex ; the hind trochanters each bear a large and strong spine, which is yellow and directed backwards and downwards, (Pl. II, fig. 5) ; the inner claws of the front tarsi are bicuspidate, (Pl. II, fig. 6). Pubescence on the legs very short, tawny yellow and inconspicuous, and on the hind tarsi blackish ; the last rounded joint of the front tarsi possesses a few longish yellow bristles above, also the middle tarsi, but the bristles are fewer, while the fifth joint of the hind tarsi bears about six very long bristles.

Wings pellucid with the subcostal cell yellow, and the stigma, as well as the base of all the veins pale brown ; Radius 4+5 is strongly arcuate outwardly, its deepest curb being just after the radio-median cross-vein. Squamulae white, with a yellow margin and white fringes. Halteres yellow.

*Female*.—Rather similar to the male. The antennae are much darker above. Vertex and the upper part of the frons are shining black with a vertical, narrow black band in the centre, which extends to the antennae, and which is brownish at about the middle ; the rest of the frons and all the face is waxy-yellow. The black and yellow markings on the last four or five abdominal segments are usually much more distinct than in the male and the yellow band on the second segment is never interrupted. The yellow band on the fourth segment occupies about three-fourths of the segment leaving the base black ; it is a little emarginate below ; the lower margin of this segment is yellow. The fifth segment is shining black with its hind and lateral margins yellow. The sixth segment is dark brown, with its lateral margins sometimes yellow, and the seventh segment is dark brown, almost blackish. Ovipositor shining black. The tarsi in general, and also the ring on the hind femora are lighter coloured.

Length from  $9\frac{1}{2}$  to 11 mm.

Although this species is not rare in Egypt I have never known it to occur abundantly. It occurs in Cairo and its neighbourhood, Alexandria, Helwan, Wadi Hoff, Wadi Rishrash and my dates are from June to May.

*X. aegyptium* has for some time been considered as a synonym of *X. scutellaris* Fabr. and is known to occur throughout North Africa and in the Ethiopian Region.

## 4. LASIOPHTHICUS ROND.

ROND., Nuov. Annal. Sci. Nat. Bologna, (2). II. 459. XXXI., (*Lasiophticus*) (1844) et Annal. Acc. Asp. Nat. Nap., III. 157. (*Lasiophticus*) (1846).

SYNONYMY:—*Catabomba* OST.-SACK., West. Dipt., Bull. Geolog. Survey, III. N° 2. 323. (1877) et Catal. N.A. Dipt., ed. ii. 244. (1896); WILLIST., Syn. N.A. Syrph., 62. (1886); MIK. Wien. Ent. Zeitg., I. 154., VII. 222. (1888); VERR., Brit. Fl., VII. 333., Cat. Syrph., 55. (1901).

This genus is distinguished from the Genus *Syrphus* by the very much inflated frons in both sexes, owing to which the space between the eyes diminishes from the frons to the mouth; in the male there is also an area of large facets on the upper and middle portion of the eye.

The metamorphoses of members of this genus have been known since 1760 when Linnæus speaks of the larva of *Musca pyrastræ* found feeding among Aphids on *Pyrus*. Lundbeck also states that the same larva is mentioned by Réaumur (1737) as occurring on *Sambucus* and *Lonicera*; by De Geer (1776) on *Rosa* (*Musca rosæ*); by Meigen (1822) on *Sonchus oleraceus*; by Vallot (1834) on *Cannabis*; by Curtis (1857) on *Brassica oleracea* on the shore in July; and by Schiner (1857) from *Carduus*. Verrall also states that the same species was bred from *Rosa*, and from larvæ feeding on *Aphis brassicæ* and *pruni*, and on an *Aphis* from *Centaurea*.

Lundbeck gives the following description of the larva of *L. pyrastræ*: "it is not much flattened, tapering towards the anterior end and with strong mouth hooks; it is strongly transversely corrugated, and the dermis is shagreened from densely placed small spines; on the ventral side there are seven transverse swellings, each belonging to a segment; the swellings are divided into some warts somewhat similar to prolegs. On the dorsal side there are some longer hairs or spines, placed, distantly in transverse rows on some of the corrugations, and similar ones are found along the sides; they are regularly placed quite in the same way as described for *Platychirus* viz. on the second to seventh abdominal segments, two on one corrugation in the middle, and on the following corrugation two on each side, besides the three lateral ones longer

downwards; then follow two corrugations without spines, and hereafter the same arrangement is repeated; these segments are each divided into four corrugations and the spines are placed on the two middle ones; on the first abdominal segment and on the meso'and metathoracal segments these are six spines on each on one corrugation, and on the first abdominal segment also three at the side. At the posterior end the body terminates below with a somewhat cushion-shaped part, and above it is a cavity in which the brown posterior spiracles lie close together, but not on any process; each spiracle shows three slits; the anterior spiracles are small, placed above the prothoracal segment on each side. The larva is green with a yellow or whitish-yellow line along the dorsum and a narrower and sometimes less distinct line along each side. The pupa is elongated ovate, broad and rounded in front, not much tapering behind; it has the same spines or hairs as the larva; the posterior end is bent a little downwards and above it are the posterior spiracles in the same cavity as in the larva. The pupa is at first green, later on it becomes more brown and more pellucid, and the enclosed fly is then distinctly seen through the puparium. The length of the pupa is about 9 mm. The pupa rests attached with the posterior end to some leaf or stalk, but Martelli records that at time of pupation the larva leaves the plant and goes 2-3 cm. into the earth and pupates there. According to Martelli the eggs are elliptical in shape, 1.13-1.26 mm. long, of milk-white colour, with the shell ornamented; they are deposited singly on leaves with Aphids; the same author gives interesting notes about the copulation and tells that the female flies with the male on the dorsum to a secure place; he gives the duration of the copulation as about three hours."

#### TABLE OF EGYPTIAN SPECIES.

- 2 (1) Yellow bands on sides of thorax present ; abdominal lunules wider and those on the third and fourth segments very little arched with their inner ends always touching the upper margin, (Pl. IV, fig. 5).... 1 *pyrastris* L.
- 1 (2) Yellow band absent on sides of thorax ; abdominal lunules more or less narrow, those on the third and fourth segments much arched, their inner ends very rarely touching the hind margins, (Pl. IV, fig. 4 and Pl. I, fig. 11)..... 2 *albomaculatus* MACQ.

1. *L. PYRASTRI* L. (Pl. IV, fig. 5).

L., Syst. Nat., X. 594 (*Musca*) (1758), XII. II. 987. 51. (*Musca*) (1761); RÉAUM., Mém. Ins., III. t. XXX. f. 9. (—) (1737); PODA, Ins. Mus. græc., 115. (*Musca*) (1761); SCOP., Entom. Carn. 345. 931. (*Musca*) (1763); O.F. MULL., Fauna Friedrichsd., 721. (*Musca*) (1764); GEOFFR., Hist. Ins., II. 517. 46. (—) (1764); FABR., Syst. Entom., 771. 42. (*Syrphus*) (1775), Spec. Ins., II. 432. 58. (*Syrphus*) (1781), Entom. Syst., IV. 305. 102. (*Syrphus*) (1794) et Syst. Anth., 249. 3. (*Scæva*) (1805); SCHRANK, Enum. Insect., 447. 907. (*Musca*), (1781) et Faun. Boica, III. 115.2431. (*Musca*) (1803); GMEL, Syst. Nat., V. 2875. 51. (*Musca*) (1788); VILL., Entom. Linn., III. 447. 100. (*Musca*) (1789); ROSSI, Fauna Etr., II. 299. 1479. (*Syrphus*) (1790); CEDERH., Faunæ Ingr. Prodr., 306. 962. (*Syrphus*) (1798); DONOV., Brit. Ins., XII. 19. t. 401. f. 1. (*Musca*) (1807); ILLIG., Fauna Etr. Rossi, II. 454. 1479. (*Syrphus*) (1807); LATR., Hist. Nat. Crust. Ins., XIV. 363. 2. (*Syrphus*) (1803) et Gen. Crust. Ins., IV. 325. (*Syrphus*) (1809); FALL., Dipt. Suec. Syrph., 39.5. (*Scæva*) (1817); MEIG., System. Beschreib., III. 303. 44. (*Syrphus*) (1822); DUMÉR., Cons. Gén., t. IV. f. 10. (*Syrphus*) (1823); MACQ., Rec.Soc.Sci.Lille, 1827. 252. (104).41. (*Syrphus*) (1827) et Suit. à Buff., I. 536. 3. (*Syrphus*) (1834); VALLOT, Bull. Soc. Entom. Fr., III. LXV., (*Syrphus*) 1834; WESTW., Introd., II. 557. f. 130. 21. et 131. 7. (*Syrphus*) (1840); CURT., Garden. Chron., 1842. 1441. (*Scæva*) (1842) et Farm. Ins., 80. (*Syrphus*) (1860); ZETT., Dipt. Scand., II. 703. 5. (1843) et XIII. 5091. 5. (*Scæva*) (1859); ROND., N. Annal. Sci. Nat. Bologna, (2) VIII. 340. *nota* (1847) et Dipterol. Prodr., II. 139. 7. (1857); WALK., List Dipt. Brit. Mus., III. 579. (*Syrphus*) (1849) et Ins. Britann., I. 287. 2. t. x. f. 12. (*Syrphus*) (1851); RATZEB., Forstins., III. 150. (*Syrphus*) (1844); SCHIN., Verh. zool.-bot. Ges. Wien, VII. 338. 7. (*Syrphus*) (1857) et Fauna Austr., I. 301. (*Syrphus*) (1862); BONSD., Finnl. Insekt., I.: 235.5. (*Scæva*) (1861); BOISD., Entom. hortie., 631. (*Syrphus*) (1867); FRNLD., Verh. zool.-bot. Ges. Wien, XVII. 456. (*Syrphus*) (1867); OST.-SACK., Bull. Geolog. Survey, III. 325 (*Catabomba*) (1877) et Trans. Ent. Soc. Lond., 1884. 495. 5. (*Syrphus*) (1884); WILLIST., Syn. N. A. Syrph., 63. t. IV. f. 1. (*Catabomba*) (1886); ADOLPH, N. Acta Leop. Carol. Acad., XLVII. t. II. f. 3. (*Syrphus*) (1885); GRIFF., Bull. Mus. Torino, VIII. (143). 6. (*Catabomba*) (1893); F. LYNCH., An. Soc. Cient. Argent., XXXIV. 120. 2. (*Catabomba*) (1893); SNOW., Kans. Univ. Quart., III. 232. (*Catabomba*) (1895); GIRSCHN., Ill. Wochenschr., 658.

(*Syrphus*) (1897); PLATEAU, Mém. Soc. Zool. France, 1900. 277. (*Syrphus*) (1900); VERR., Brit. Fl., VIII. 334. l.f. 278-279. (*Catabomba*) (1901); How., Ins. Book, t. XXI. f. 27. (1902); ALDRICH, Cat. N.A. Dipt., 363 (1905); BEZ., Dipt. Syriaca et Ægypt., 93. 57. (1909), Ditt. raccolti d. Leo Fea, (407). 6. 8. (1912) et Syrph. Ethiop. Reg., 3. 25., 31. (1915); BECK., BEZ., KERT. u. STEIN, Kat. Palæarkt. Dipt., III.55.(1907); KERT., Cat. Dipteror., VII.98.(1910); OSBURN., Journ. N. Y. Entom. Soc., 58 (1910); LUNDB., Dipt. Danica, V. 261. 263, f. 116, 117. (1916).

*SYNONYMY*:—*affinis* SAY., Journ. Acad. Philad., III. 93. 9. (*Syrphus*) (1823) et Compl. Writ., II. 81. (*Syrphus*) (1859); WIED., Ausereurop. Zweifl., II. 117.2. (*Syrphus*) (1830).

*mellinus* HARR., Expos. Engl. Ins., 30. t. XXIV. f. 23. (*Musca*) (1776).

*rosa* DEG., Ins., VI. 108.5. t. VI. f. 15-19. (*Musca*) (1776).

*transfugus* FABR., (*nec.* L), Entom. Syst., IV. 306. 104. (*Syrphus*) (1794) et Syst. Antl., 250. 5. (*Scava*) (1805); KETEL, Programme Pasewalk, 9, (*Syrphus*) (1903).

*var. flavoscutellatus* GIRSCHN., Wien. Entom. Zeitg., III 197. 11. (*Syrphus*) (1884).

*var. unicolor* CURT., Brit. Entom., 509. (*Scava*) (1838); VERR., Entom. Monthly Mag., V. 21. (*Syrphus*) (1869).

*DIAGNOSIS*:—Yellow bands absent on sides of thorax ; abdominal lunules more or less narrow, those on the third and fourth segments much arched, their inner ends very rarely touching the hind margins.

*DESCRIPTION*:—*Male*: Head wider than the thorax and as wide as the widest part of the abdomen. Face greyish-yellow with a narrow brownish middle line which extends to about half way between the mouth and the antennæ, but which is partially continued below, round the mouth edge and more widely across to the eyes. Frons so large and inflated that the face actually diminishes in width from the frons all the way down to the mouth. The frons is darker coloured than the face and is densely and conspicuously clothed with blackish erect pubescence. Pubescence on the face rather dense and varying from being almost uniformly whitish and inconspicuous, to being blackish on the sides and middle, but yellow between and below. On the jowls, the pubescence is pale, becoming almost white on the occiput, but yellow again near the upper part of the occiput, with a few longer, almost black hairs overhanging the eyes. Vertex black with blackish pubescence on

the disc but the pubescence behind is yellow. Eyes densely clothed with pale brown hairs which do not extend to the upper and middle portions where the facets are larger; on the front and back the facets are much smaller. Antennæ with the first joint lighter in colour, as a rule it is reddish-brown, the second joint brownish-black, and the third still darker, almost black; the third joint is rather long and bears about a third from its base a bare arista, which is brown, longer than the joint and with more than its basal half thickened.

Thorax rather shining bluish-black but obscurely tawny along the sides. Pubescence dense brownish-yellow in colour. Scutellum brownish-yellow when seen sideways, but when seen from above, the basal two thirds is more obscure, and the tip brownish-yellow; it bears rather long, dense, light yellow pubescence.

Abdomen deep dull black with shining areas and possesses three pairs of yellowish-white, yellow or orange lunules. On the second segment these lunules are almost straight and equal, but on the third and fourth segments they are sloped upwards towards the front margin, from about the middle of the side of the segment; they are narrowed about their middles and dilated at their inner ends which, sometimes touch the front margin; none of these lunules go near to the actual side margin; the fourth and fifth segments have narrow yellow hind margins. Pubescence short and mainly following the ground colour except on the side margins near the base where it is long and pale brownish. Hypopygium small.

Legs with the basal half of the anterior femora blackish; the hind femora are all blackish except the distal end; all the tarsi are darkened above. Pubescence is mostly blackish behind the anterior femora, but on the hind femora it is nearly uniformly yellowish; there are some tiny bristles on the hind tibiæ and tarsi which are yellowish except for a few black ones in front of the hind tibiæ.

Wings pellucid, with the subcostal cell and stigma pale brown. Squamulæ and their fringes whitish, but their margins yellow. Halteres yellow or orange.

*Female*, (Pl. IV. fig. 5).—Similar to the male; face is about equally wide at the vertex and mouth owing to its sides being very gently out-curved; face is pale yellow with a small darkened central line below and possessing uniformly pale pubescence. Frons inflated and vaguely darkened especially on the large dark spots above the antennæ, when it is viewed from the front; its pubescence is uniformly dense, short and black. The upper part of the occiput, when seen from above is shining æneous and rather inflated. Facets of the eyes all equal. Pubescence on the thorax is slightly shorter and

lighter in colour. Legs with the blackish markings inclined to be less extensive. Squamulæ white.

Length from 12 1/2 to 14 1/2 mm.

This species is liable to great variation both in size and shape of the abdominal markings, and in Europe the female has a well known variety *unicolor* "in which the abdominal markings entirely disappear."

*L. pyrastris* seems to be extremely rare in Egypt and I much suspect its having been imported from Syria, Italy, or Europe, as the only two specimens which have been recorded (and which I have examined) have both been captured in cultivated land where plants and trees have been imported.

The larva is said to be green with a purplish dorsal stripe and feeds ravenously on Aphids. It was bred from *Aphis brassicae*, *Aphis pruni* and from an *Aphis* on *Centaurea* in Europe.

This species is known to occur in Europe, Canary Islands, Madeira, America and Western Asia.

## 2. *L. ALBOMACULATUS* MACQ (Pl. IV. fig 4 & Pl. I, fig 11)

MACQ., Dipt. Exot., II. 2. 86. 1. t. XV. f. 6. (*Syrphus*) (1842); Lw., Dipterenf. Südafr., I. 303. 8. (*Syrphus*) (1860); MIK., Wien. Entom. Zeitg., VII. 222. 61 (*Catabomba*) (1888); VERR., Brit. Fl., VIII., Catal. Syrph., 56. (*Catabomba*) (1901); BECK., Zeitschr. f. System. Hymen. u. Dipt., VII. 243. Anmerk. (*Catabomba*) (1907); BEZ., Dipt. Syriaca et Ægypt., (21). 57. 92. (1909).

*SYNONYMY*:—*Gamellarii* ROND., Ann. Acc. Asp. Nat. Nap., III.157. (*Lasiophthicus*) (1845-46), Dipt. Prodr., II.139.6. (*Lasiophthicus*) (1857) et Annal. Mus. Civ. Genova, IV. 295. (*Lasiophthicus*) (1873); SCHIN., Verh. zool.-bot. Ges. Wien, VII. 339. 8. (*Syrphus*) (1857), Fauna Austr., I. 301. 5. (*Syrphus*) (1862) et Nov. Reise, Dipt., 351. 34. (*Syrphus*) (1868); RÆDER, Wien, Entom. Zeitg., II. 94. (*Catabomba*) (1883); MIK, Wien. Entom. Zeitg., VII. 222. 61. (*Catabomba*) (1888) et IX. 295. (*Catabomba*) (1890); A. COSTA, Atti. R. Accad. Napoli, (2) V. No. 14, 24. 41. (*Syrphus*) (1893); KETEL, Programm Pasewalk, 12 *Observ.* (*Syrphus*) (1903).

*DIAGNOSIS*:—Yellow bands on sides of thorax present; abdominal lunules wide, and those on the second and third segments slightly arched with their inner ends always touching the upper margins.



A rather large and very handsome species much resembling *L. pyrastris* but easily separated by the above characters.

**DESCRIPTION:**—*Male*, (Pl. IV, fig. 4 & Pl. I, fig. 11).—Face bright shining yellow with a black middle line which does not nearly extend to the antennæ, but which is partially continued below round the mouth-edge, narrow in the hollow below the antennæ and much increasing in width to the upper mouth-edge. Frons very large and inflated; it is a little darker than the face and clothed with dark grey, rather abundant pubescence. Pubescence on face also fairly abundant, but very short and almost white below, and dark grey and a little longer above by the sides of the antennæ. Vertex very small, black, with blackish pubescence on the disc, but pale behind. Occiput entirely covered with white silvery dust and dense, rather long, almost pure white and fairly conspicuous pubescence. Eyes covered with short pubescence which is light brown in front, and pale, almost white on the middle; the top of the eyes and the hind margins are free from pubescence; the facets on all the upper part of the eyes, except just on the front and back are much larger than the others. Antennæ more or less reddish-brown to brownish-black, with the two basal joints usually lighter in colour, as well as the ventral side of the rather long third joint; arista yellowish-brown and bare; it is inserted before the middle of the third joint and thickened for more than its basal half.

Thorax very shining blackish-blue, but yellow on the sides. Pubescence not dense, very pale greyish-white to white, except on the sides where it is rather dense, tufted, and yellowish, especially in front. Scutellum brownish-yellow when viewed sideways, but always obscured by transparency when viewed from above, and its pubescence is not dense but fairly long and almost uniformly whitish. Abdomen deep, dull, somewhat velvety black, but shining on the lower margins of the three basal segment, and with three pairs of thick, pale yellow, yellow, or orange-yellow lunules. The first pair of lunules which are on the second segment are almost straight, but narrower at their inner ends. The second and third pairs of lunules on the third and fourth segments respectively, are sloped on their upper margin, from about the middle of the side of the segment upwards towards the front margin; they are distinctly narrowed about their middle and dilated at the inner ends which usually touches the front margin; none of these lunules actually touch the side-margins. The fourth and fifth segments have yellow, narrow hind margins. Pubescence short, mainly pale, whitish and occasionally there are a few darker hairs interspersed

among the white, with blackish hairs on the side margins, except on the first two segments where it is very long and tufted, especially on the sides, and varying from pure white, to greyish-white; the pubescence on the fifth segment is longer than that on the preceding two segments, but shorter than on the two basal segments, and varies from being almost pure white to greyish-brown.

Venter shining, bright yellow to brownish-yellow, with three large central, elongated black markings, one on each of the second, third and fourth segments; the remaining distal segments vary from being reddish-brown to yellowish-brown in colour. Hypopygium small and reddish-brown.

Legs orange-yellow with the basal third of the anterior femora, and all the hind femora, except the distal end, black, as well as the three middle tarsi blackish. Pubescence on the front legs very short, pale and inconspicuous and on the hind legs longer, and blackish on the outer edge of the tibiæ only.

Wings pellucid with all the veins yellowish-brown at the base and darker at the tip, and with the sub-costal cell yellowish-brown. Squamulæ and their fringes white, but their margins yellow; the fringes of the thoracal squamulæ are very delicate and about five times as long as those of the alar pair. Halteres pale yellow to orange.

*Female*.—Very similar to the male; frons inflated and darkened on two blotches above the antennæ; facets of the eyes all equal.

Length from 13 to 15 mm.

This seems to be a rather common desert species and the larva is probably aphidiphagous like its near ally *L. pyrastris*. I have watched and caught the adult hovering over and around bushes of *Iphiona mucronata* and *Zygophyllum coccineum* in the Wadi Hoff, about and even after sunset. I also possess a few specimens caught in the desert along the Suez road, but I have never seen it nor do I know of any specimens of this insect being captured near towns or cultivated land. There is no doubt about there being more than five or six broods in the year as my dates are from January to November. It is known to occur in Southern Europe, North Africa, Canary Islands, Madeira, Asia Minor and North Persia.

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### 3. SYRPHUS FABR.

FABR., Syst. Entom., 762. 172. (1775).

SYNONYMY:—*Scæva* FABR., Syst. Antl. 248.57. (1805).

*Psilogaster* LIOY, Atti. Instit. Veneto, (3) IX. 753. 12. (*Psylogaster*) (1863-64) nec BLANCH., Hym., 1840.

*Epistrophe* WALK., Ins. Sanders., III. I. 242. (1852).

Species of moderate size, blackish or æneous and clothed with moderate pubescence; always with yellowish markings on the face, scutellum and abdomen, but not on the pleuræ, even though the yellow colouring may be sometimes very faint on the face and scutellum. Eyes always touching on the frons in the male, but well separated in the female; they are usually bare and sometimes hairy. Antennæ moderate in length and in shape; it always bears near the base of the oval third joint, a bare arista.

Wings possess the most typical *Syrphus* venation, with Radius 4+5 almost straight; alula fairly well developed and when at rest the wings lie parallel over each other on the abdomen.

The metamorphoses of several species of *Syrphus* have been studied and in the case of some species, have been known for a long time. *S. ribesii* (a very common European species) was observed by Linnæus and Fabricius who both speak of the larva as occurring "inter Aphides." Réaumur mentions the larva of *S. balteatus* (?) among Aphids on *Prunus* and *Ribes*. Verrall states that it is probable that De Geer's exhaustive description of the metamorphoses of his *Musca pinastri* referred to *S. corollæ*. Fallen also found the larva of *S. corollæ* feeding on Aphids on *Brassica oleracea*. Bouché has also described the larvæ of *S. ribesii* and *S. balteatus*. Schiner states that he found the pupa of *S. nitidicollis* in April under a stone in a humid meadow and that it metamorphosed after a short interval. Lundbeck says that according to Brauer, Weyenberg mentioned the developmental stages of *S. balteatus* and *corollæ*. Verrall says that *S. balteatus* and *auricollis* have been bred from larvæ found feeding on *Aphis pruni*. Martelli mentions the larvæ of *S. ribesii*, *bifasciatus*, *balteatus* and *auricollis* as feeding on *Aphis brassicæ*. Lundbeck has also found

larvae and examined the developmental stages of many European species of *Syrphus* in Denmark amongst which he mentions *S. corollæ*, the larvæ of which he found among Aphids on *Prunus* on June 3rd and which developed into adults on June 22nd; *S. balteatus*, the larvæ of which he found among Aphids on *Sambucus* and on *Brassica*, and pupæ of the same species on *Rosa*, *Rheum*, *Typha*, and *Phragmites*. He describes the larva as being "always more or less leech-like; it is somewhat flattened with a flat ventral surface, the dorsal surface more or less slightly arched; the body is attenuated or pointed towards the head-end, broad behind, sometimes a little rounded; it is more or less strongly transversely corrugated so that the single segments are not easily made out. Below there are seven more or less distinct, transverse swellings, which may be more or less distinctly divided into proleg-like warts, and have small spines. The larvæ may otherwise be somewhat different; some are almost smooth above, the dermis only finely shagreened, and there are short, soft bristles on some of the corrugations and at the sides; in others the shagreened structure is developed into a clothing of five, short and dense spines, and there are the same soft bristles; in a third group the dermis is rather coarsely shagreened and on the dorsum of the segments are large, conical warts, and similar at the sides or here they are developed into conical filaments; the short bristles and the conical warts or filaments, which answer to each other, are present in the same number and arranged quite in the same way as described above for *Platycheirus* and *Lasiophthicus*; there are consequently on the meso- and metathoracal segments six in a transverse row, besides a couple at the side; on the first abdominal segment there are likewise six, placed on one corrugation, and on the next six segments two in the middle on one corrugation and two at each side on the next corrugation, and on all seven abdominal segments three on each side; each segment shows four corrugations divided by furrows, and the bristles or warts are placed on the two middle corrugations of each segment. The anterior spiracles are small, lying on each side of the prothoracal segment; the posterior spiracles are placed above on the last segment on a short, slightly longitudinally divided process, more or less elliptical in a transverse section. The mouth is provided with hooks and the head is much retractile and able to be stretched out, and the whole body is likewise very contractile, so that the larva may alter its shape to a rather high degree; when fully stretched out it is long, broad and flat, when contracted it is much shorter, higher and narrower. The colour varies; it may be yellowish, yellowish-grey, grey, reddish-grey or darker, generally more or less marmorate from darker designs and often with one or

more longitudinal lines. The pupa (puparium) is elongately ovate, arched above, somewhat flat below, broad and rounded in front, more or less tapering behind; it is sometimes longer and more drop-like (in the narrow bodied species); it has, of course, the same dermal structure as the larva, only it is generally less pronounced, and the larger warts, when such are present, are smaller and more contracted. The anterior larval spiracles are generally not to be seen, but the posterior process is present as in the larva. The colour is similar to that of the larva, but it is often altered as the development of the imago proceeds, because the colour of the imago shine through the puparium."

The larvæ are all aphidiphagous and are found on the leaves and stalks of various plants among Aphids infesting these.

Further the same author gives a most vivid and interesting account of the feeding process of these predacious larvæ, which I feel it would be of great interest to give here: "...; the larvæ are very voracious; I once had a larva of *S. nitens* which in six days devoured so many Aphids that the white, empty skins of these latter formed a thick layer on the bottom of the bottle; the larva had during that period grown double the size. It is interesting to examine the larva when feeding; it is generally sitting amongst a colony of Aphids and it stretches and raises the fore-parts of its body and bends it down to different sides until an Aphid is touched; it then pierces it with its mouth-hooks, detaches it with a jerk, and with the fore-parts of the body in a raised position it sucks it out with a pumping action; the Aphid is seen to become white, and is quite sucked in one minute or in a few minutes; it is then thrown off by a small jerk and the action is repeated. Sometimes larvæ have been observed to attack and suck other larvæ of their own kind, such as is also the case with *Lasiophthicus*. The pupa is generally found on leaves or stalks attached by some glue with the hind part... According to Buckton (Mon. of Brit. Aphid. II, Roy. Soc. 119. 1879.), the egg-shell is ornamented with bifurcate papillæ; the eggs are deposited singly and may often be seen on leaves of oak, fir etc., where they are placed in the midst of Aphids."

It is surprising that this genus should be so poorly represented in Egypt; of the genus over 60 species are known from the Palæarctic region and strictly speaking only one species, *S. corollæ* seems to occur commonly in this country.

The species of *Syrphus* are beautiful flies and exquisite hoverers in the sunshine and our common species seems to occur every-where near plants and flowers in the desert as well as throughout the Nile valley. Verrall states that species of *Syrphus*

sometimes occur in great swarms amongst which he mentions *S. corollæ*, *Lasiophthicus pyrastris* and *S. balteatus*; they "appeared to have all hatched simultaneously, and to have at once commenced buzzing about in the sunshine in a foolish kind of way, without caring to take food, for most of them seemed to be mere shells without any substance inside"; the date of the occurrence of the two and only swarms is August 24th. This genus is one of the largest in the family and now includes about 350 species recorded from practically every part of the world.

### TABLE OF EGYPTIAN SPECIES.

- 1 (2) Length of abdomen less than twice its breadth; abdominal spots very conspicuous, rather lunulate and extend over the side margins (Pl. IV, figs. 2, 3)..... 1 *corollæ* FABR.
- 2 (1) Length of abdomen more than twice its breadth; abdominal spots do not reach the side margins.
- 3 (4) Abdominal bands duplicated (Pl. IV, fig. 6) 2 *balteatus* DEG.
- 4 (3) Abdominal bands very emarginate, or separated into triangular spots, (Pl. IV, fig. 1) . . 3 *auricollis* MEIG.

#### 1. *S. COROLLÆ* FABR. (Pl. IV. figs. 2, 3).

FABR., Entom. Syst., IV. 306.103. (1794) et Syst. Antl., 250.8. (*Scava*). (1805); MEIG., Syst. Beschreib., III. 304.46. (1882); MACQ., Rec. Soc. Sci. Lille, 1828.239.23. (1829) Suit. à Buff., 1.539.18. (1834), (in WEBB et BERTH.): Hist. Nat. d'Iles Canar., Entom., Dipt., 109.49. (1838) et Explor. Scient. Algerie, Zool., III.469.170. (1849); WIED., Aussereurop. Zweifl. II. 121. 7. (1830); BRULLÉ, Expéd. Scient. de Morée, III. 1., 310.669. (1832); Lw. Verh. zool.-bot. Ver. Wien., VII. 80.32. (1857), Programm. Posen, 1840.34.4 (1840) et Isis, 1840. VIII. 572.4. (1840); ZETT., Ins. Lappon., Dipt., 602.16. (*Scava*) (1838), Dipt. Scand., II. 720.23. (*Scava*) (1843). Dipt. Scand., VIII. 3138.23. (*Scava*) (1849) et XII. 4657.23. (*Scava*) (1855); WALK., List Dipt. Brit. Mus., III. 583. (1849) et Ins. Britann., Dipt., I. 289. 9. (1851); SCHIN., Verh. zool.-bot.

Ver. Wien. VII. 345. 31. (1857), Fauna Austr. Dipt., I. 306. 22. (1862) et Nov. Reise, Dipt., 353. 41. (1868). ROND., Dipterol. Prodr., II. 135. 20. (1857); BONDS., Finl. tvaving. Ins., I. 241. 20. (*Scæva*); PALMA, Annal. Accad. Asp. Nat. Nap., (3), III. 53. 67. (1863); MALM, Gøeteb. Kongl. Vet. Handl., 1863. 31. (*Scæva*) (1863); WEYENB., Tijdschr. v. Entom. (2). IX. (XVIII). 155. t. IX. f. 17. (1876); KOW., Wien. Entom. Zeitg., IV. 136 et 168. (1885); NEUHAUS, Dipt. Marchica, 101. 10. (1886); STROBL, Mittheil. Naturwiss. Ver. Steiermark, XXIX. 1892. 169. (1893) et Wien. Entom. Zeitg., XII. 74. (1893); v.d. WULP, Catal. Dipt. South Asia, 118. (1896); COQUILL., Proc. Unit. Stat. Nat. Mus., XXI. 321. (1898); STROBL, Wien. Entom. Zeitg., XVIII. 146. 100. (1899) et Mem. R. Soc. Espan. Hist. Nat., III. 327. (100). (1906); PLATEAU, Mém. Soc. Zool. France, 1900. 277. (1900); VERR., Brit. Fl., VIII. 381. 19. et Cat. Syrph., 60. (1901); BECK., Mitteil. Zool. Mus. Berl., II. 84. 119. (1903) et Zeitschr. f. System. Hym. u. Dipt., VII. 243. *Anmerk* (1907); VILLEN., Feuil. Jeun. Natur., XXXIII. 147. (1903); BEZ., Dipt. Syriaca et Ægypt., (21). 57. 94. (1903) et Ditt. Eritrei, II. 13. 38. (1908); BECK., BEZ., KERT. u. STEIN, Cat. Palaearkt. Dipt. III. 62. (1907); KERT., Catal. Dipteror., VII. 110. (1910); LUNDB., Dipt. Danica, V. 304-307, f. 121. 122. (1916).

*SYNONYMY*:—*?pinastri* DEC., Mem. p. serv. l'hist. d. Ins., VI. 113. b.t. VII. f. 1-7 (*Musca*) (1776).

*consisto* HARR., Expos. Engl. Ins. 112. t. XXIII. f. 56. (*Musca*) (1782).

*vorax* FOURER., Entom. Paris, II. 486. 49. (*Musca*) (1785); VILL., Entom. Linn., III. 539. 351. (*Musca*) (1789).

*pyrorum* SCHRANK, Faun. Boica, III. 114. 2430. (*Musca*) (1803).

*olitoria* FALL., Dipt. Suec., Syrph., 43. 12. (*Scæva*) (1817).

*lacerus* MEIG., Syst. Beschreib., III. 301. 41. (1822); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 345. 32. (1857).

*fulvifrons* MACQ., Rec. Soc. Sci. Lille, 1828. 240. 24. (1829) et Suit. à Buff., I. 540. 19. (1834); MEIG., Syst. Beschreib. VII. 132. 101. (1838); SCHIN., Verh. zool.-bot. Ver. Wien. VII. 346. 33. (1857); STROBL, Mittheil. Naturwiss. Ver. Steiermark, XXIX. 1892. 169. (1893), WIEN. Entom. Zeitg., XII. 74. (1893) et XVIII. 146. (1899).

*?flaviventris* MACQ., Rec. Soc. Sci. Lille, 1828. 240. 25. (1829) et Suit. à Buff., I. 540. 20. (1834); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 346. 34. (1857).

*crenatus* MACQ., Rec. Soc. Sci. Lille, 1828. 243. 29. (1829) et Suit. à Buff., I. 541. 23. (1843); MEIG., System. Beschreib., VII. 133. 104. (1838); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 346. 37. (1857) et Fauna Austr. Dipt., I. 312. (1832); PALMA, Annal. Accad. Asp. Natur. Nap., (3). III. 54. 68. (1863); ROND., Atti. Soc. Ital. Sci. Nat. Milano, XI. 28. (1868).

?*terminalis* WIED., Aussereurop. zweifl., II. 135. 33. (1830); Lw., Dipterenf. Südafr., I. 303. 1. (1860).

*annularis* CURT., Guide, Edit. II., 252. 13. (*Scæva*) (1837).

*octomaculatus* CURT., Guide, Edit. II., 252. 15. (*Scæva*) (1837).

?*disjunctus* MACQ., Dipt. Exot., II. 2., 88. 3. (1842) et Explor. Scient. Alger., Zool., III. 469. 171. (1849); Lw., Dipterenf. Südafr., I. 303. 2. (1860).

*topiarius* WALK. (*nec.* MEIG.), List Dipt. Brit. Mus., III. 582. (1849) et Ins. Britann., Dipt., I. 290. 12. (1851).

*propinquus* MACQ., Dipt. Exot., suppl. 4., 150. 44. t. XIV. f. 8. (1849); BIG., Annal. Soc. Entom. France, (6) III. 316. (1883).

*corotlæ* ROND., Bull. Soc. Entom. Ital., IX. 61. (1877).

*berber* BIG., Annal. Soc. Ent. Fr. (6) IV. 87. 3. (1884).

*Var. latifasciatus* MACQ., Rec. Soc. Sci. Lille, 1828. 242. 28. (1829) et Suit. à Buff., I. 541. 22. (1834); MEIG., Syst. Beschreib., VII. 132. 103. (1838); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 346. 35. (1857); VERR. Entom. Monthly Mag., V. 192. 10. (1868), IX. 253. 6. (1873) et Brit. Fl., VIII. 371. 15. f. 292. (1901); BEZ., Bull. Soc. Entom. Ital., XXXV. 14. (1903); LUNDB., Dipt. Danica, V. 302-304. (1916).

= *abbreviatus* ZETT., Dipt. Scand., VIII. 3136 13-14. (*Scæva*) (1849); OST-SACK., Proc. Boston Soc. Nat. Hist., XVIII. 114.4. (1875); WILLIST., Proc. Amer. Philos. Soc., XX. 313. (1882) et Bull. Unit. Stat. Nat. Mus., (31), 81. (1886); CHAGNON, Natur. Canad., 1901 (sep.) 33. 3. (1901); ALDR., Catal. N. Amer. Dipt. 364 (1905).

= *affinis* Lw. Programm. Posen, 1840. 35. 11. (1840) et Isis, 1840. VIII. 574. 11. (1840); SCHIN., Verh. zool.-bot. Ver. Wien. VII. 342. 19. (1857); Lw., Rocznik towarz. nauk. Krakow, P. 3. XIX. (XLII). 180. 24. (1871); STROBL, Mittheil. Naturwiss. Ver. Steiermark, XXIX. 1892. 167. (1893).

= *affinis* PALMA, Annal. Accad. Asp. Natur. Napoli. (3) III.



51. 64. t. fig. 5. (1863); ROND., Atti. Soc. Ital. Sci. Nat. Milano, XI. 26. (1868).

= *excisus* SCHIN., Fauna Austr., Dipt., I. 311. 42. *var.* (1862).

= *flaviceps* ROND., Dipterol. Prodr., II. 133. 18. (1857).

= *var. rufinasatus* BIG., Annal. Soc. Entom. Fr., (6) IV. 88. 4. (1884).

= *var. algirus* MACQ., Explor. Scient. Alg., Zool. III. 469. 172. t. IV. fig. 11. (1849); BECK., Mitteil. Zool. Mus. Berl., II. 84. 120. (1903); VERR., Brit. Fl., VIII., Cat. Syrph., 61. (1901).

**DIAGNOSIS:**—Length of abdomen more than twice its breadth; abdominal bands very conspicuous, always separated into lunules in the female, though often connected in the male and which extend over the side margins. Male with very large genitalia.

**DESCRIPTION:**—*Male:* Face and frons entirely orange-yellow, but from the front mouth-edge there is a blackish line running about half way up the face, which becomes gradually narrow and brownish above and then dies out; the jowls are also blackish. The pubescence on the upper part of the frons is black and conspicuous down to below the antennæ at the sides, but a large space above and immediately below the antennæ is quite bare; lower down the hairs on the sides of the face are very pale and inconspicuous; the pubescence on the jowls and on the lower part of the occiput is yellowish or almost white, but it becomes darker, almost orange on the upper part, and with no black hairs overhanging the eyes. Vertex black and possessing black hairs. Eyes quite bare. Antennæ dark brown, but brownish-orange on the ventral surface, which colour is often restricted to the base of the third joint, but sometimes it is extended below, on the sides and above, so that the antennæ appear reddish-brown; arista rather short, brownish-orange and situated on the oval third joint, at a point about one-third of its length from the base. Thorax moderately shining æneous-black; its pubescence is fairly dense and entirely tawny or yellow; scutellum brownish-yellow with entirely yellow pubescence. Abdomen ovate, about as long as the head and thorax, but rather flat, and wider than the head and thorax; it is dull black except at the base, apex, side margins, and on the hind-margin of the fourth segment, where it is shining; there are three pairs of orange markings, often varying greatly in size, followed by two orange hind margins; the markings on the second segment are the smallest, sloping slightly downwards, widely separated and connected at their highest point with the side margins; the

second pair (on the third segment) are deep, generally the deepest, and rather lunulate, their inner ends being very close to the front margin, while their outer front ends, which are connected narrowly with the side margins, are some distance from the front margin; these lunules are rather flat below and very commonly either faintly or distinctly connected at about their middles, sometimes forming a broad orange band; the third pair of markings (on the fourth segment) are somewhat similar to the second, but their inner ends, opposite the front margin are wider and their lower sides slope upwards, but they are also liable to great variation; the lower margin of the fourth segment is orange; the fifth segment is almost entirely orange except for an obscure black line along the middle of its base, which at times is scarcely visible and sometimes thickened into a dark blotch. The pubescence on the abdomen is long and yellow about the basal corners, whitish on the large genitalia, but elsewhere short and rather inconspicuous, mainly following the ground colour, except for some pale hairs on the black disc of the basal segment; the marginal hairs, after the base are all black even where the yellow markings extend over the side margins. Venter with the basal orange markings seen by transparency, but are vaguely more extended. Hypopygium very large, with the big knob shining æneous-black, but the lower knob usually dark orange, although in some rare cases it may also be black.

Legs orange, but the basal half of the anterior femora and the basal two-thirds of the hind femora and the tarsi are brown above. Pubescence on femora moderate, mainly pale after the front pair, but with a slight black fringe behind, on the yellow portion, which fringe is more conspicuous on the middle femora, which otherwise have their longer pubescence pale; the hind femora are covered with minute black bristles and possess very few hairs; there are also some minute black bristles on the hind tibiæ, except about the inner side of the apex.

Wings rather broad, pellucid, but blackish at the extreme base, then yellowish, with the stigma usually even darker. Squamulæ whitish-yellow, with yellower margins and fringes. Halteres yellow.

*Female*:—Similar to most males, but the yellow abdominal markings are much smaller and always well separated; they are more lunulate on their upper edge and more widely connected with the side margins; the fifth segment usually has broad orange sides, which are connected with a narrow orange hind margin, hence leaving only the middle black. Frons shining black on the upper third, with a somewhat indefinite lower limit, which is sometimes vaguely prolonged; there are often a pair of small dark lunules

just above the antennæ. Legs orange, except the extreme base of the anterior femora.

Length from 8 to 12 mm.

*S. corollæ* is one of the commonest Egyptian species of this family and occurs all over Egypt. My records extend from the end of August to June. It is known to occur all over North Africa, Europe, Asia Minor and North Asia, Madeira, Canary Islands, China, Japan and South America.

## 2. *S. BALTEATUS* DEG. (Pl. IV. fig. 6 male).

DEG., Mém. pour serv. l'hist. d. Ins., VI.116.7. (*Musca*) (1776); VILL., Entom. Linn., III. 454.111. (*Musca*) (1789); MEIG., System. Beschreib., III. 312.57. (1822); MACQ., Rec. Soc. Sci. Lille, 1828. 249.38. (1829), Suit. à Buff., I. 538.11. (1834) et Explor. scient. Algérie, Zool., III. 469.169. (1847); BRULLÉ, Expéd. sci. Morée, III. 1., 310.670. (1832); BOUCHÉ, Naturgesch. d. Ins., 1.50.33. t. V. f. 1-3 (1834); VALLOT, Annal. Soc. Entom. Fr., III. Bull., LXV. (1834); Lw. Programm. Posen, 1840.34.5. (1840), Isis, 1840. VIII. 572.5. (1840) et Verh. zool.-bot. Ver. Wien., VII. 80.38. (1857); BLANCH., Hist. Nat. Ins., III. 600. t. IV. f. 2. (1840); ZETT., Dipt. Scand., II. 721. 24. (*Scæva*) (1843) et VIII. 3139. 24. (*Scæva*) (1849); ROND., Nuov. Annal. Sci. Nat. Bologna, (2). VIII. 341. nota. (1847), Dipterol. Prodr., II. 132. 13. (1857) et Bull. Soc. Entom. Ital., IX. 61. (*balthæatus*) (1877); WALK., List Dipt. Brit. Mus. III, 582. (1849) et Ins. Britann., Dipt., I. 289. 10. (1851); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 350. 50. (1857), Fauna Austr. Dipt., I. 309. (1862) et Nov. Reise, Dipt., 353.42. (1868); CURT., Farm. Ins., 82. (1860); BONDS., Finl. tvaving. Ins., I. 241. 21. (*Scæva*) (1861); MALM., Goeteb. Kongl. Vet. Handl., 1863.32. (*Scæva*) (1863); WEIJENB., Tijdschr. v. Entom., (2) IX. (XVII). 155. (1874); v. d. WULP, Sumatra Expéd., Dipt., 33.5. (1881) et Catal. Dipt. South Asia, 118. (1896); Kow., Wien. Entom. Zeitg., IV. 135. (1885); NEUHAUS, Dipt. Marchica, 102.17. (1886); BECK., Berlin. Entom. Zeitschr., XXXIII. 175.161. (1889); GRIFF., Bull. Mus. Zool. e. Anat. comp. Torino, VIII. N° 143.7. (1893); STROBL., Mitteil. Naturwiss. Ver. Steiermark, XXIX. 1892.166. (1893); MIK., Wien. Entom. Zeitg. XVII. 169.84. (1898); COQUILL., Proc. Unit. Stat. Nat. Mus., XXI. 322. (1898); PLATEAU, Mém. Soc. Zool. Fr. XIII. 278. (1900); VERR., Brit. Fl., VIII. 390.22. f. 302. (1901); MEIJ., Zoolog. Jahrb., Abth. Anat., XV. 679.

t XXXIV. f. 46-47. (1902); ANDREWS, Entomol. Record., XV. 81. *var.* (1903); BRUNETTI, Records Indian Mus., I. 169. (1907); LUNDB., Dipt. Danica, V. 316-318 (1916).

*SYNONYMY*:—*cannabinus* SCOP., Entom. Carn., 344.929. (*Musca*) (1763); PETAGNA, Spec. Ins. ultr. Calabr., 43.230. (*Musca*) (1786); GMEL., Syst. Nat., V. 2864. 113. (*Musca*) (1790); OLIV., Encycl. Méthod., VIII. 45.215. (*Musca*) (1811); SCHIN., Verh. zool.-bot. Ver. Wien, VI. 415. 929. (1856) et VII. 448. (1857).

*alternatus* SCHRANK, Enum. Ins. Austr., 448.903. (*Musca*) (1781); GMEL., Syst. Nat., V. 2880. 384. (*Musca*) (1790); ROSSI, Fauna Etr., II. 297.1483 (1790) et Edit. II. 457.1483. (1807); SCHRANK, Fauna Boica, III. 109.2417. (*Musca*) (1803).

*scitule* HARRIS, Expos. Engl. Ins., III. t. XXXIII. f. 35. (*Musca*) (1782).

*scitulus* HARRIS, Expos. Engl. Ins., 105. t. XXXII. f. 33. (*Musca*) (1782).

*nectareus* FABR., Mantissa Inscet., II. 341.74. (1787) et Ent. Syst., IV. 309.116. (1794); PANZ., Fauna Germ. LXXXII. t. 19. (1801); SCHELLENB., Gattung. d. Flieg., 52 et 53. t. X. f. 2. (1803); FABR., Syst. Antl., 253.22. (*Scava*) (1805); FALL., Dipt. Suec. Syrph., 43.14. (*Scava*) (1817).

*nectarinus* GMEL., Syst. Nat., V. 2876.365. (*Musca*) (1790).

*viridaureus* WIED., Analecta Entomol., 35.56. (1824) et Aussereurop. Zweifl., II. 137.37. (1830); v. d. WULP, Catal. Dipt. South Asia, 119. (1896).

*triligatus* WALK., Proc. Linn. Soc. Lond., I. 19.65. (1856); v. d. WULP., Catal. Dipt. South Asia, 119. (1896).

*var: alternans* MACQ., Dipt. Exot., II. 2., 89.7. (1842) et Suppl. 4., 149. (1849); WALK., List Dipt. Brit. Mus., III. 583. (1849) et Proc. Linn. Soc. Lond., I. 124.107. (1856).

*var: nectarinus* WIED., Aussereurop. Zweifl., II.128.21. (1830); OST.-SACK., Annal. Mus. Civ. Genova, XVI. 438. (1882).

*var: andalusiacus* STROBL, Wien. Entom. Zeitg., XVIII. 145. 99. (1899).

*DIAGNOSIS*:—Length of abdomen nearly three times its breadth; abdomen with almost parallel sides; abdominal bands duplicated and do not reach the side margin.

*DESCRIPTION*:—*Male* “Face orange, bearing grey dust and  
 “a slight pale pubescence; jowls usually tinged with black, but  
 “often on only the separating off space near the lower front corner  
 “of the eye; there are no long black hairs overhanging the eyes  
 “on their upper part; the vertex is dusted æneous, narrow and pale  
 “haired on at any rate its front part. Frons often more or less  
 “greyish black and dusted on its upper part, but shining orange  
 “just above the antennæ; its pubescence is black and fairly long.  
 “Antennæ orange, often with the upper part or even more of the  
 “third point brownish or even brownish-black; arista varying from  
 “yellowish brown to black.

“Thorax shining æneous with three faint pale greyish lines  
 “on the fore part, the middle line narrow and the other two broad;  
 “the pubescence is erect, tolerably abundant but not conspicuous,  
 “all yellowish. Scutellum with longer, almost all black, pubescence.  
 “Abdomen almost linear, but slightly broadest about the end of the  
 “second segment; the second segment has the yellow basal corners  
 “connected along the sides with the broad pair of yellow spots on  
 “the disc; the third and fourth segments have the entire fore  
 “margin yellow as well as a broad middle band, thus leaving the  
 “entire hind margin black as well as a narrow line near the base  
 “which does not reach the side-margins, the broad yellow band is  
 “at its middle slightly produced in front and slightly emarginate  
 “behind; the fifth segment is all orange except a basal middle  
 “black spot. Pubescence mainly the same as the ground colour but  
 “there are a few black bristles down the middle and on the orange  
 “part of the fourth segment. Genitalia orange and black.

“Legs long and thin, all orange except the blackish coxæ and  
 “trochanters and the rather obscurely orange hind tarsi; pubes-  
 “cence moderate, the long hairs on the femora yellow except usually  
 “a few blackish hairs behind the middle femora after the middle,  
 “and in front of the hind femora near the tip; the tiny bristles  
 “about the tip of the middle femora, and in front of and all about  
 “the tip of the hind femora are black, as are also usually all those  
 “down the top and front of the hind tibiæ, which almost forms a  
 “ciliation down the front of the tibiæ; the basal joints of the hind  
 “tarsi long and thin.

“Wings slightly brownish, with the subcostal cell and stigma  
 “distinctly darkened; Radius 4+5 very nearly straight. Squamulæ  
 “yellow. Halteres orange.

*Femâle*. — “Similar but the orange markings are usually less  
 “extensive and those on the front margin of the third and fourth  
 “segments are somewhat contracted about the middle, and the black  
 “line which follows extends over the side-margins, while the black

“hind margin is broader; these distinctions are however variable, as I have seen females quite as orange as an ordinary male, while on the other hand I have seen a female from Bigot’s collection labelled “Corsica” in which the middle bands were divided into side spots.

“Pubescence shorter, and more black on the abdomen. Frons narrow but gradually widening down to the base of the antennæ, and it is greyish-yellow with an indefinite dark middle line, but shining orange above the antennæ, while the ocellar triangle is almost shining black. Antennæ often almost all brown.

“Length about 10 mm.

“The metamorphoses of this species have been often observed and Zetterstedt states that the larva feeds on the Aphids of the common bean (*Faba*) and Potatoe (*Solanum esculentum*); Mr. G. C. Bignell has bred it from *Aphis pruni*; Mik has dealt with it at some length in Wien. Entom. Zeitg. XVII. p. 169. (1898).”

As I possess only a single specimen of this species the above account has been copied from Verrall’s excellent description. This individual, a male, measuring over 12 mm. in length was caught by Mr. Kirkpatrick at Giza, December 2nd, 1921, where it was found hovering in a field of clover.

This specimen agrees with Verrall’s description, except for the second segment of the abdomen in which the orange is much less extensive; in fact the whole of the second segment is rather shining black, except for two isolated and elongate orange spots on the sides, (Plate IV, fig. 6).

As far as I am aware this is the first record of the occurrence of *S. balteatus* in Egypt but it is known to occur in other parts of North Africa, (e.g. Morocco).

It has also been recorded from Asia, India, Australia, Spain, China, Japan, Ternate and is common throughout Europe.

### 3. *S. AURICOLLIS* MEIG. (Pl. IV. fig. 1 female).

MEIG., Syst. Beschreib., III. 318. 64. (1822); MACQ., Suit. à Buff., I. 535. 2. (1834); ZETT., Dipt. Scand., II. 743. 26. (*Scæva*) (1843); WALK., List Dipt. Brit. Mus., III. 584. (1849), et Ins. Britann., Dipt., I. 293. 22. (1851); SCHIN., Verh. zool.-bot. Ver. Wien., VII. 354.66. (1857) et Fauna Austr., Dipt., I. 311.44. (1862); ROND., Dipterol. Progr., II. 132. (1857); Egg., Verh. zool.-bot. Ges. Wien, X. 666. (1860); BONDS., Finl. tvaving. Ins., I. 241.41. (*Scæva*) (1861); MALM., Gøteb. Kongl. Vet. Handl., 1863.40. (*Scæva*) (1863); Kow., Wien. Entom. Zeitg., IV. 136. (1885);

NEUHAUS, Dipt. Marchica, 115.28. (1886); STROBL., Mittheil. Naturwiss. Ver. Steiermark, XXIX. 1892.168. (1893); VERR., Brit. Fl., VIII. 397.25 f. 303. (1901); LUNDB., Dipt. Danica, V. 323-325 (1916).

*SYNONYMY*:—*umbellatarum*, var. FALL., Dipt. Suec., Syrph., 44.15. (*Scæva*) (1817).

*decorus* MEIG., System. Beschreib., III. 319.66. (1822); MACQ., Rec. Soc. Sci. Lille, 1828. 237.20. (1829), Suit. à Buff., I. 542.28. (1834) et in WEBB et BERTH. Hist. Nat. d'iles Canar., Entom., Dipt., 109. 50. (1838); WALK., Ins. Britann., Dipt., I. 292. 20. (1851); SCHIN., Verh. zool.-bot. Ver. Wien. VII. 352.56. (1857) et Fauna Austr., Dipt., I 308.29. (1862); ROND., Dipterol. Prodr., II. 131.10. (1857); NEUHAUS., Dipt. Marchica, 115.31. (1886).

*Iris* MEIG., System. Beschreib., III. 320.67. (1822); ZETT., Dipt. Scand., II. 761. (*Scæva*) (1843).

*modestus* MEIG., System. Beschreib., III. 323.72. (1822); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 353.60 (1857) et Fauna Austr., Dipt., 5. 311.43. (1862); EGG., Verh. zool.-bot. Ges. Wien, X. 666. (1860).

*maculicornis* ZETT., Dipt. Scand., II. 736.38. (*Scæva*) (1843) et VIII. 3142.38 (*Scæva*) (1849); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 352.54. (1857) et Fauna Austr., Dipt., I. 308. (1862); ROND., Dipterol. Prodr., II. 151.8. (1857); BONDS., Finl. tvaving. Ins., I. 246.35. (1861); MALM., Goeteb. Kongl. Vet. Handl., 1863.38. (*Scæva*) (1863); VERR., Entom. Monthly Mag., V. 7. (1868); Kow., Wien. Entom. Zeitg., IV. 136. (1885); NEUHAUS, Dipt. Marchica, 115.29. (1886); BECK., Berlin. Entom. Zeitschr., XXXIII. 175.167. (1889); STROBL, Mittheil. Naturwiss. Ver. Steiermark, XXIX. 1892.170. (1893) et Wien. Entom. Zeitg., XVIII. 146.101. (1899); BECK., Zeitschr. f. system. Hymen. u. Dipt., VII. 243. *Anmerk.* (1907).

*macilentus* MEIG., System. Beschreib., VII. 135.109. (1838); SCHIN., Verh. zool.-bot. Ver. Wien, VII. 355.72. (1857).

*cinctipes* ZETT., Dipt. Scand., XIII. 6000.46-47. (*Scæva*) (1859).

?*fuscus* PALMA, Annal. Accad. Aspir. Natur. Nap., (3). III. 55. 79. t., f. 7. (1867); ROND., Atti. Soc. Ital. Sci. Nat. Milano, XI. 27. (1868).

var. *nigritibius* ROND., Dipterol. Prodr., II. 130.7. (1857); VERR., Brit. Fl., VIII. 399. (1901); VILLEN., Feuil. Jeun. Natural., XXIII. 147. (1903).

*DIAGNOSIS*:—Length of abdomen more than twice its breadth; abdominal bands very emarginate, or separated into triangular spots which never reach the side margins.

*DESCRIPTION*:—*Male*. “Face and frons covered with dull “yellow dust, which leaves the central knob shining and usually “darkened from orange up to blackish, and downwards from this “the face is often darkened to the mouth and the lowest part; the “front of the frons just above the antennæ is also shining, being “huteous between and immediately above the antennæ, and blackish “above that; the pubescence of the frons is all black and is also “inconspicuously so down the sides of the face, but pale yellow on “the lower part of the face, on the jowls and on the back of the “head; on the upper part of the back of the head there are some “longer black hairs overhanging the eyes; vertex shining black “and black haired. Antennæ reddish orange with the third joint “black except for a large reddish-orange spot beneath its base; “arista brown and bare.

“Thorax very shining æneous black, humeri and pleuræ dull; “pubescence pale brownish to yellow. Scutellum æneous yellow with “longer black pubescence.

“Abdomen rather dull black but shining at the tip, narrower “that the thorax and with parallel sides; the *second segment with* “*a pair of* fairly large triangular spots running up from near the “*lower side-margins* towards the middle of the disc and growing “broader as they ascend, but leaving about the middle sixth of the “segment black; the third segment with a pair of spots (or a band “near the front margin) which do not touch the front or the side- “margins, but are really a pair of large orange spots which are “wider at the sides than at the middle and which are almost ex- “tended to the side-margins at their lowest side edge, and sloping “upwards, thence on their lower margin leave just the middle of “the segment all black (=var *maculicornis*), or with the spots “united on their upper part; the fourth segment has fairly similar “spots and its hind margin is all orange and united with very “large orange spots at the basal corners of the fifth segment, “which leaves only the triangular middle half of that segment “black. The abdomen is often less orange, especially on the fourth “and fifth segments. Pubescence pale yellow and long about the “base at the basal portion, but all black after the yellow spots on “the third segment, except for a few yellow hairs at the sides “about the base, or on the yellow spots, of the fourth segment. “Genitalia moderate, mostly orange. Legs varying remarkably from “simply all pale brownish-yellow with indications of darker color- “ing on the third femora, to the hind legs being not uncommonly



“blackish-brown with just the base and the tip of the femora and  
“the basal third of the tibiæ reddish-orange. Pubescence behind  
“the femora not scarce, black on the anterior femora but pale  
“near the base in pale specimens, on the hind femora pale yellow  
“beneath and in front; the tiny bristles on the hind legs are all  
“black about the tip of the femora and on all the tibiæ except the  
“usual yellow patch inside the hind pair about the tip.”

“Wings pellucid, subcostal cell and stigma distinctly brown-  
“ish. Squamæ dull yellow, with brownish orange margins. Halteres  
“brownish yellow.”

*Female*:—“Similar; frons glittering blue-black at the vertex,  
“then all covered with yellow dust but sometimes with an in-  
“distinct middle black line connecting the vertex with a large shin-  
“ing space above the antennæ which space ranges from shestnut  
“to black; the pubescence of the frons is all black, but on the face  
“it is all pale, and there is scarcely any dark middle line, while it  
“is all orange right away to the jowls; the hairs on the back of  
“the head are dense and conspicuously white, but yellow on the  
“upper part; the pubescence on the thorax is short, but on the  
“scutellum short on the disc only, the hairs round the margin being  
“fairly long. Legs very variable as in the male, from a normal  
“form which would have them all dull orange except for a black  
“ring about the middle of the hind femora, to specimens in which  
“this ring is considerably extended and the hind tibiæ and tarsi  
“become almost all blackish, and even until the front femora be-  
“come extensively darkened.”

“Length about 10 mm.”

“Mr. G.C. Bignell bred it from larvæ which fed on *Aphis*  
“*pruni*, and *S. auricollis* seems to be the main species to be stored  
“up by *Crabro varus* to provide food for its larvæ, as in its bur-  
“rows there occur masses of *S. auricollis* (4 males, 3 females) with  
“their heads all pointing in one direction, while a pair of *S.*  
“*balteatus* occurred in company.”

Here again I only possess a single specimen of this interesting  
species and therefore I can do nothing better than give Verrall's  
description of it above in detail. This individual, a female, was  
caught in my garden at Shoubra on December 20th, 1921, where  
it was resting on a rose shrub. My specimen seems to agree with  
the darkest forms of this extremely variable species, mentioned  
by Verrall and its dark central knob, blackish antennæ and arista,  
very dark abdomen with its very obscurely luteous spots (Plate I  
fig. 4), and its remarkably blackish legs makes it almost identical  
with Rondani's *S. nigritibius*.

The capture of this specimen does not greatly surprise me, although this species has never yet been recorded from Egypt. Like all the members of its genus, the larva of *S. auricollis* is aphidophagous in habit, and commonly feeds on the aphids attacking rose trees. As these are continually being imported into this country from various parts of Europe, it is to be expected that this and other species of similar habits may be introduced occasionally in the form of pupæ attached to the plant stems, etc. As a matter of fact the individual in question may represent such a case as during the past few years we have been continually receiving large consignments of plants including roses, for the garden.

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## 6. PSEUDODOROS BECK.

BECK., *Mitteil. Zool. Mus. Berl.*, II. 92. (1903).

This genus is rather closely allied to the genus *Baccha* FABR. and still more so to the genera *Doros* MACQ., and *Spazigaster* ROND. It also possesses several characters in common with the genus *Syrphus*, such as the venation of wings, and the head. The body is practically identical to that of *Doros* whilst the legs remind one of *Baccha*.

Becker gives the following table in order to clearly exhibit the characters of this interesting genus:—

BACCHA	DOROS	PSEUDODOROS	SPAZIGASTER
(1) Sides of thorax devoid of hairs.	Sides of thorax devoid of hairs.	Sides of thorax hairy.	Sides of thorax devoid of hairs.
(2) Third joint of antennæ short and oval	Third joint of antennæ short and oval.	Third joint of antennæ longish and oval.	Third joint of antennæ short and oval.
(3) Arista bare, inserted near the base.	Arista bare, inserted near the base.	Arista bare inserted just before the middle.	Arista hairy, inserted near the base
(4) Face not projecting.	Face projecting.	Face not projecting	Face a little projecting
(5) Prominence of face wart-shaped	Prominence of face wart-shaped.	Prominence of face nose-shaped as in <i>Syrphus</i>	Prominence of face nose-shaped as in <i>Syrphus</i>
(6) Abdomen stalk-shaped, very slender.	Abdomen robust, club-shaped.	Abdomen club-shaped but much more slender than in <i>Doros</i> .	Abdomen flattened narrow at base
(7) Hind femora straight, without thickening at base.	Hind femora straight, with a slight thickening at base	Hind femora curved, without thickening at base	Hind femora slender, straight, without thickening at base

### 1. P. NIGRICOLLIS BECK. (Pl. VI, fig. 5).

BECK., *Mitteil. Zool. Mus. Berl.*, II. 92. 128. (1903).

*DESCRIPTION*:—*Male*: Face and frons yellowish-white except for two fairly shining black spots at the base of the antennæ, which run down the centre of the face, and extend to the upper mouth-edge; pubescence of face and frons uniformly pale, short,

and inconspicuous, while that on the upper part of the occiput rather longish and yellow, but on the lower part whitish. Vertex rather shining black; a little protruding and very pointed in front, and possesses a few pale, very inconspicuous hairs. Eyes fairly large, quite bare, and meet for a distance which is about equal to the length of the frons. Antennæ rather porrected, with the first and second segments very short and the third elongate and oval; it is three times as long as deep, black but with white and grey sheens; this third joint bears just before its middle a short, black and bare arista.

Thorax blackish-æneous with steel-blue iridescence; its pubescence is very delicate, pale yellow, fairly long and conspicuous; the pleuræ also possess very similar pubescence except for a tuft of much longer hairs on the mesopleuræ. Scutellum very shining bronze-green with very pale, short and inconspicuous pubescence on the disc, but with a few much longer, delicate, pale and radiating hairs on the side and lower margins. Abdomen rather shining black with three pairs of yellow markings. The first and second segments are very shining steel-blue, but the second possesses in the middle of the sides two small oval yellow markings, and the basal margin of this segment is dull black. The two oval yellow markings on the third segment are a little nearer the basal margin, whilst the pair on the fourth segment, which is very inflated on its apical end, are situated quite close to the basal margin. The fifth segment is very short, also shining black with its apical end yellow. The pubescence on the two basal segments is very delicate, long and whitish; the hairs somewhat tend to diverge and are rather tawny and woolly; the pubescence on the last three segments is very short blackish and adpressed. The small hypopygium is yellow and ball-shaped and its upper part is clothed with black hairs.

Legs yellow and black; the two anterior femora with their basal halves black and the tibiæ are entirely yellow except for a narrow black ring near the middle; the last three joints of the tarsi are also blackish and the two basal joints of the tarsi yellow. The posterior femora are black except for a small yellow spot near the base and they are decidedly bent at the apex; the posterior tibiæ and tarsi are also black, except for the basal half of the tibiæ yellow; the tarsi are slightly longer than their tibiæ; the hind metatarsi are long and rather slender and nearly as long as the other four joints together.

Wings pellucid, feebly clouded with yellowish-grey with the stigma brownish; Radius 4+5 is but very feebly looped. Squamulæ white. Halteres yellow.

Length 11 to 12 mm.

This curious and interesting insect seems to be extremely rare, the only two specimens, both males, which I know, were bred from larvæ captured at Ghezireh by Mr. F.A. Willcocks. One is in my collection labelled "feeding on *Aphis pruni* on reed-grass, Ghezireh, spring 1909" and the other in the collection of the Sultania Agricultural Society labelled "bred from Banana plant, Ghezireh".

The female has not been described and is so far unknown.

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## ERISTALINÆ

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Antennæ moderate in shape and length, drooping; arista dorsal and always bare in the Egyptian species.

Wings with the radio-median cross-vein at, or after, the middle of cell M2; Radius 4+5 with a deep sudden loop downwards at about the middle of cell R5; cell R1 either closed or open. Legs usually simple, but the hind femora sometimes thickened and curved, with a dilatation just before the apex.

Many of the members of this sub-family (especially the European and Exotic genera) seem to mimic bees and all may be known by the peculiar loop in the cubital vein. The metamorphoses of many European species have been studied and nearly all approximate to the well known "rat-tailed" larva of *Eristalis tenax*. These live in liquid mud or filth and the long anal process can be extended or diminished by the larva according to the varying depth of the liquid in which it exists. I have found the larvæ of *Eristalis* in various stagnant ponds near Cairo in company with the rather familiar and similar larva of *Hirtea anubis* (Stratioidæ).

I have also watched the adults of *E. taniops* and *æneus* hovering and resting over the edges of these ponds and in all probability they were ovipositing. I have further found larvæ of *Eristalis* in a water tank containing macerated bones, at the School of Medicine, in conjunction with *Psychodid* and *Culicid* larvæ and have watched the female of *E. taniops* hovering over this tank and ovipositing in the moist chinks and cracks of the floating bones.

The only representatives of this sub-family in Egypt belong to the two great genera *Eristalis* and *Helophilus* which contain most of the species and which are represented all over the world. However the true *Helophilus* does not seem to be represented here (nor apparently in North Africa) but those that do occur belong mainly to the Sub-Genus *Mesembrius*.

TABLE OF THE EGYPTIAN GENERA  
OF ERISTALINAE.

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- I (ii) Cell R1 closed; eyes hairy, face with a  
central knob ..... ERISTALIS
- 1 (2) \*Arista plumose or distinctly pilose.... *Eristalis*
- 2 (1) Arista bare or very shortly pubescent.
- 3 (4) Face unicolorous ..... *Eristalomya*
- 4 (3) Eyes with markings.
- 5 (6) Eyes with 5 obscure transverse stripes.. *Eristalodes*
- 6 (5) Eyes with obscure spots which are sepa-  
rated or confluent.
- 7 (8) Eyes practically touching on the frons in  
the male ..... *Lathyrophthalmus*
- 8 (7) \*Eyes well separated on the frons in the  
male ..... *Eristalinus*
- II (i) Cell R1 open; eyes bare..... HELOPHILUS
- Eyes of male just touching..... *Mesembrius*

## 7. ERISTALIS LATR.

LATR., Hist. Nat. Crust. Ins., III. (1802) et XIV. 363. (1804).

SYNONYMY:—*Palpada* MACQ., Suit. à Buff., I. 512. 19. (1834).

*Priomerus* MACQ., Suit. à Buff., I. 511. 18. (1834).

*Syrphus* ZETT. (*nec.* Fabr.), Ins. Lapon., Dipt., 591. 52. (1838)

*Eristalinus* ROND., Nuov. Annal. Sci. Nat. Bol. (2). II. 453. I. (1844).

*Eristaloides* ROND., Nuov. Annal. Sci. Nat. Bol., (2) II. 453. 3. (1844).

*Dolichomerus* MACQ., Dipt. Exot., suppl. 4., 131. (1849).

*Eristalomyia* ROND., Dipterol. Prodr., II. 38. 2. *nota* (*Eristalomyia*) (1857).

*Simoides* LW., Cefv. Vet. Akad. Forh., XIV. 382. 14. (1858).

*Eriops* LIOY, Atti. Inst. Veneto, (3). IX. 743. 1. (1864).

*Doliosyrphus* BIG., Annal. Soc. Ent. Fr., (6). II., CXX. (1882).

*Doliosyrphus* BIG., Annal. Soc. Ent. Fr., (6). III. 228. (1883).

*Eristalodes* MIK, Wien. Entom. Zeitg., XVI. 114. (1897).

*Lathyrophthalmus* MIK, Wien. Entom. Zeitg., XVI. 114. (1897).

Large or rather large bee-like flies, which are distinguished from all other Egyptian Genera by the peculiar venation of the radial and cubital veins.

Head moderate or rather large; face with a distinct central knob and a moderately produced upper mouth edge, this latter being more or less descending. The central knob is always left shining black, clear of the pale dust and pubescence which cover and obscure all the sides of the face and most of the frons. Face always separated from the jowls by clear bright black spaces. Frons not conspicuously produced and always distinctly pubescent. Eyes always touching in the male, sometimes spotted and always hairy;



generally the hairs are found on a limited space of the upper part, except in *E. tenax*, where the hairs are much more numerous and arranged in denser lines. Antennæ moderate in shape and length, the third joint always bearing near its base a bare arista. Thorax quadrate, in some species bearing fairly conspicuous light markings, and in others quite faint ones; it is more or less densely pilose all over, without any trace of bristly hairs. Scutellum equally pilose with the thorax and usually yellowish and translucent (except in *E. æneus*).

Abdomen moderate in shape, ranging in colour from a uniform æneous-black to being largely covered with orange, white and black markings; it varies in shape and in pilosity with different species. Legs almost simple in construction but with the hind tibiae nearly always curved and with variable ciliation. Wings specialised by the closed R1 cell and by the deep loop in Radius 4+5 over the middle of cell R5, these characters distinguishing them from the wings of any other Egyptian Diptera.

**SYNONYMY:**—In 1857 Rondani separated off the European species with a plumose arista into a limited genus *Eristalis*, after which the species with a bare or almost bare arista have been broken up into various subgenera. Rondani, who made the first attempt, suggested *Eristalomyia* for the species which have the eyes touching in the male and thus created a genus *Eristalinus* for a single species (*E. sepulchralis*) in which the eyes are well separated in the male. This induced Mik in 1897 to further subdivide the genus. He suggested that the species with a bare arista should be separated into 4 genera of which the first should be *Eristalomyia* with its type *E. tenax*, which has the eyes unicolorous. As Verrall states, it was unfortunate for his generic distinction that *E. tenax* has two bands of darker pubescence running down its eyes, which form its most distinctive specific character; Verrall further admits that these bands are caused by pubescence and are longitudinal, so that they do not traverse the generic or subgeneric rank. After *Eristalis*, Mik separated off the species with what he called "oculi picti" which one would translate as "eyes with markings," and on this basis he formed a genus *Eristalodes*, in which the eyes have five obscure transverse stripes, and a genus *Lathyrophthalmus* which is distinguished from Rondani's *Eristalinus* simply because the eyes of the male approximate in *Lathyrophthalmus* and do not approximate in *Eristalinus*.

Moreover the species of this genus all show a close relationship to each other in their stout solid shape (even in the very numerous European species), so that no confusion should arise as to their position in this family and I cannot help agreeing with

Verrall who considers that all attempts to split up the European or Palæarctic species into distinct genera have been failures.

*DESCRIPTION*:—The larva, as described by Lundbeck has a cylindrical body, a little attenuated behind before it goes over into the long, thin, tail-shaped part; the body consists of twelve segments, the head included, this latter being small and retracted; above the mouth opening are two small, two-jointed organs, the antenna-like papillæ or so-called antennæ, the last joint bearing two small papillæ; there are no mouth-hooks but a pharyngeal skeleton; at each side of the mouth below is a small wart with spines. The body is somewhat transversely corrugated above, and the prothoracal segment has some longitudinal furrows. The dermis is tough and densely beset with small spinules; besides these clothing spinules there are above on the corrugations some rather larger spines or small warts but they are very slightly pronounced; they are present in the same number and arranged quite in the same way as in other Syrphid larvæ so that there are some on the prothoracal segment, a transverse row of six on the second and third thoracal segments and on the first abdominal segment; on the other segments there are two in the middle on one corrugation and two towards each side on the next corrugation; on the sides there are three on each segment and one quite below on the ventral surface. On the ventral side there are a pair of proleg-like warts, beset with spines, on the prothoracal segment, and then six pairs of prolegs on the six first abdominal segments; these are beset with curved spines at the end, especially along the hind margin. The last segment terminates in the long tail-shaped part with the posterior spiracular tube which is telescopically pro- and retractile and able to be stretched out to a very great length. The tail consists of three divisions, the foremost is a prolongation of the last segment; it is transversely wrinkled and like the other dermis beset with fine spines; at the sides of it are four small bunches of hairs at intervals, one at each side at the base, one at the apex and two intermediate, but the distances between them are dependent on the contractions; the next division is thinner, longitudinally striated and with fine, nearly microscopical spines in rows; finally the third division is still thinner, more firmly chitinized and brown; it is very finely transversely striated, the end part smooth, and it bears at the apex the spiracles surrounded by eight plumose hairs. The length of the three divisions are dependent on the degree of extension, only when fully extended, they are seen in full length, and when fully retracted the intermediate part is quite hidden in the basal division and only the end of the third part is seen protruding from the first or basal part, and also this latter part may be somewhat

contracted. At the hind margin of the prothoracal segment lie the anterior spiracles; they form short, brownish, a little curved horns, but they may be quite retracted and then only seen as points. Above, on the first abdominal segment two somewhat circular spots are seen: these are the points through which the anterior spiracular tubes in the pupa protrude.

The anus lies below in front of the tail; protruding from its opening is sometimes seen a bundle of thread-like appendices, the use of which is not known; Trybom takes them to be an organ of locomotion, perhaps also of respiration. The larva is of a greyish or yellowish-white colour and about 18 mm. in length excluding the tail. The pupa is brownish, its upper anterior end forms a flattened declivity, at the hinder border of which the anterior spiracular tubes protrude; these tubes are long, reaching 3 mm., a little curved, directed upwards and forwards and a little diverging; on the lower side they are beset with small tubercles (in other species such as *tenax* these tubercles lie on the sides and above, but not below); at the front margin of the pupa the anterior larval spiracles are seen as two short horns, the pupa has thus in all four horns, two long ones above and two short ones below them. The larval tail is still found in the pupa, curved in various ways, and on the ventral side, the prolegs are visible. The length is about 12 mm.

No distinguishing characters are known for the different species, but according to Miall such may be found in the small spinules on the dermis; these being in some species simple, in others branched in various ways. For pupating the larva quits the water and pupates in the vicinity, generally on the earth but they are also sometimes seen at the surface of the water or they may suspend themselves on stalks, palings etc. by the tail. The eggs are deposited a little above the surface of the water. The eggs are whitish, oblong and finely shagreened.

The species of *Eristalis* are handsome, conspicuous flies and fairly good hoverers; they occur generally on flowers especially on Compositæ, Umbelliferae and Cruciferae in gardens as well as in waste places, and in valleys; I have even found *E. quinquelineatus* hovering over a bush of *Zygophyllum coccineum* in the desert more than one hundred miles away from any cultivation. They also frequently occur near water.

Of the genus more than 45 species have been recorded from the Palæarctic region and of these hitherto only 4 have been found in Egypt.

## TABLE OF EGYPTIAN SPECIES.

- 1 (6) Eyes almost bare except for a small space above.
- 2 (3) Scutellum æneous like the thorax; eyes spotted and touching in the male only for one third of the length of the vertical triangle. (Pl. V, fig. 6)..... 1 *æneus* SCOP.
- 3 (2) Scutellum yellowish, or at least distinctly so translucently.
- 4 (5) Antennæ orange-yellow; eyes touching in the male for two thirds of the length of the vertical triangle. (Pl. V, figs. 3, 4).... 2 *quinquelineatus* F.
- 5 (4) Antennæ dark brown or blackish; eyes touching in the male for about one half the length of the vertical triangle and with narrow dark bands. (Pl. V, fig. 2)..... 3 *tæniops* WIED.
- 6 (1) Eyes very hairy, some of the hairs being concentrated in two bands, quite the largest species. (Pl. V, fig. 1)..... 4 *tenax* L.

1. E. *ÆNEUS* SCOP. (Pl. V, fig. 6).

SCOP., Ent. Carn., 356. 967. (*Conops*) (1763); VILL., Entom. Linn., III. 522. 287. (*Musca*) (1789); FABR., Entom. Syst., IV. 302. 88. (*Syrphus*) (1794) et Syst. Antl., 244. 57. (1805); PANZ., Fauna, Germ. LXXXII. 15. (*Syrphus*) (1801); LATR., Gen. Crust. Ins., IV. 324 et 332 (*Elophilus* et *Milesia*) (1809); FALL., Dipt. Suec. Syrph., 28. 22. (*Syrphus*) (1817); MEIG., System. Beschreib., III. 384.2. (1822) et VII.143. (1838); MACQ., Rec.Soc.Sci.Lille, 1827.309. (161). 2. (1827) et Suit. à Buff., I. 506. 16. (1834); ZETT., Dipt. Scand., II. 668. 14. (*Syrphus*) (1843); WALK., List Dipt. Brit. Mus., III.610. (1849) et Ins. Britann., Dipt., I.244.4. (1851); ROND., Dipt. Prodr., II. 40. II. (1857); SCHIN., Verh. zool.-bot. Ges. Wien, VII. 390. 19. (1857) et Fauna Austr., I. 333. (1862); PALMA, Annal. Acc. Asp. Nat. Nap., (2). III. 43.28. (1864); WILLIST., Syn. N.A. Syrph., 161. (1886); VERR., Trans. Ent. Soc. Lond., 1898. 415.7. (1898) et Brit. Fl., VIII. 501. 2. f. 348-49. (1901); How., Ins. Book, t. XX.

f. 14. (1902); BECK., Mitteil. Zool. Mus. Berl., II. 83. 118. (1903); LUNDB., Dipt. Danica, V. 418-19. (1916).

*SYNONYMY*:—? *anescens* MACQ., Dipt. Exot., Suppl. II. (2). 117. (59) 45. (1842).

*cuprovittatus* WIED., Aussereurop. Zweifl., II. 190. 54. (1836).

*flavicornis* ROSSI (*nec.* FABR.) Faun. Etr., II. 290. 1465. (*Syrphus*) (1790); ILLIG., Fauna Etr. Rossi, II. 447. 1465. (*Syrphus*) (1807).

*melanius* HARRIS, Expos. Engl. Ins., 53 t. XV. f. 12. (*Musca*) (1776).

*punctata* MULL., Fauna Friedrichsd., 720 (*Musca*) (1746) et Zool. Dan. Prodr., 2050. (*Musca*) (1776); VILL., Entom. Linn., III. 465. 143. (*Musca*) (1789); SCHRANK, Fauna boica, III. 115. 2432. (*Musca*) (1803).

*sincerus* WALK., List Dipt. Brit. Mus., III. 611. (1849); T. HARRIS, Ins. injur. to Veg., 3ed., 609. (1862); Lw. Sillim. Journ. of Sci. and Arts, XXXVII. 317. (1864).

*stygius* NEWM., Entom. Mag., II. 313. (1830).

*taphicus* WIED., Aussereurop. Zweifl., II. 191.57. (1830).

*DIAGNOSIS*:—Scutellum æneous like the thorax; eyes spotted and touching in the male only for one third of the length of the vertical triangle; species entirely shining æneous.

*DESCRIPTION*:—*Male*: Entirely shining æneous-black; face almost covered with greyish-white dust and whitish pubescence, except on a shining black, rather narrow, elongate central knob, which extends down to the upper mouth-edge; the space from the mouth-edge to the eyes is also shining black. Jowls fairly large, black with whitish pubescence; occipital border greyish-black with very short pubescence; occiput rather puffed out and shining, with larger luteous pubescence. Vertex shining black, rather long, with inconspicuous short tawny pubescence. Frons covered with dust and pubescence rather more yellow than that on the face, and leaving the small (sometimes very small) middle space shining black, and which is continued down to the sides of the antennæ, but with a luteous margin close against the antennæ.

Eyes reddish with dark spots, less numerous and more isolated and rounded on the lower part, but more numerous and irregularly coalescing on the upper part; they meet for a very short distance, about one third of the vertical triangle, and bear a very short

inconspicuous pubescence on the upper part only. Antennæ dull orange, but darkened about the base and often above the third joint; there are some tiny yellow bristles on the basal joints and two long and four or five much smaller black bristles on the second joint near the tip above; arista dull orange long and bare.

Thorax and scutellum all shining æneous, clothed with rather short, but dense, tawny pubescence; thorax nearly always with indications of light grey stripes, which never quite reach the lower margin.

Abdomen entirely the same unicolorous shining æneous, neat in shape and gradually decreasing in width from the base of the second segment to the end. Pubescence more or less tawny, ranging from all brownish-tawny to nearly all pale yellow, but usually brownish-tawny at the base. Venter shining black, with dull yellowish-grey hind margins and pale yellow pubescence, but on the disc of the fourth segment the pubescence is black and on the hind margin there are two tufts of black bristles which overhang the genitalia. Hypopygium rather large but not seen from above, and almost symmetrical.

Legs black, but the knees are rather broadly yellow including almost half of the anterior and a third of the hind tibiæ; anterior tarsi orange at the base up to almost the end of the basal joint; front coxæ orange at the tip. Hind femora moderate, and but little thicker than the others. Pubescence all moderate in length and fairly abundant, pale, except for a few bristly hairs beneath the hind femora near the tip, and a few tiny bristles on the dark tips of the anterior tibiæ and a part of the fringe inside the hind tibiæ.

Wings slightly tinged with brown, yellowish about the base, with a fairly long and rather conspicuous stigma, which is dark at the base; vena spuria hardly perceptible; the veinlets after cells R1 and R5 both turn upwards, especially the first; the basal portion of Radius 2+3 bears bristles. Squamulæ large, whitish-yellow with fringes of the same colour. Halteres yellow.

*Female*:—Very similar to the male. Frons at the vertex rather narrow and scarcely widening until near the antennæ, shining black above and on the puffed out occiput, but brownish and coarsely punctate and dull in the middle; shining black again above the antennæ, with a narrow luteous front margin; its pubescence is brownish-yellow at the vertex, then black, then luteous with hairs turned backwards, ending with pale yellow hairs pointing forward. The pubescence of the eyes, which is still more limited than in the male is hardly perceptible. The five dull grey stripes on the thorax are much more distinct, and instead of

ending at about two-thirds of the way down are continued to the lower margin, thus rendering the latter a uniform dull grey. The fifth segment of the abdomen is small and triangular. Wings more pellucid than in the male.

Length from 9 to 12 mm.

This species is extremely common in Upper as well as Lower Egypt, and it may be found on flowers practically all the year round. My dates are from October to the same month of the following year, in Cairo.

It is recorded from nearly all Europe, and North America, Algiers, Syria, even far down in Africa and probably occurs in many other parts of the world.

## 2. E. QUINQUELINEATUS FABR. (Pl. V, figs. 3 and 4).

FABR., Spec. Ins., II. 425. 21. (*Syrphus*) (1781), Entom. Syst., IV. 290. 42. (*Syrphus*) (1794) et Syst. Antl., 239. 29. (1805); WIED., Aussereurop. Zweifl., II. 185. 47. (1830); ERICHS., Jahresber., 1847. (1847); Lw., Öfv. Vet. Akad. Forhandl., XIV. 382.40. (1857), Berl. Entom. Zeitschr., II. 230. (1858) et Dipterenf. Südafr., (396), 324. 8. (1860); SCHIN., Verh. zool.-bot. Ges. Wien., VII. 397. 18. (1857) et Nov. Reise, Dipt., 364. 84. (1868); VERR., Trans. Ent. Soc. Lond., 1898. 415. 9. (1898); BECK., Mitteil. Zool. Mus. Berl., II. 82. 116. (1903); BEZ., Syrph. Ethiop. Region, 84. 81. (*Lathyrophthalmus*) et 82 (*L. tabanoïdes*) (1915).

SYNONYMY:—*fasciatus* MEIG., System. Beschreib., VII. 143. 22. (1838); GERM., Faun. Ins. Europ., XXIII. 23. (1839).

*megacephalus* ROSSI, Mant. Ins., II. 63. 532. t.v.f. 4. (*Syrphus*) (1794).

*punctifer* WALK., Entom., V. 274. 55. (1871); YERB., Entom. Monthly Mag., (2) XII. 77. (1901).

*quinque-fasciatus* SCHIN., Nov. Reise, Dipt., 364. (1860); BECK., Mitteil. Zool. Mus. Berl., II. 81. (1903).

~~*quinque-striatus* F., Entom. Syst., IV. 289. 41. (*Syrphus*) (1794) et Syst. Antl., 245. 60. (1805); WIED., Aussereurop. Zweifl. Ins., II. 187. 50. (1830).~~

*quinquevittatus* MACQ., LUC. Explor. Alg., Zool., III. 465. 154. t. IV. f. 10. (1849).

*iridens* WALK., List Dipt. Brit. Mus., III. 610 (1849).

*tabanoïdes* JAENN., Abhandl. Senkt. Ges., VI. 402. (94). 126. t. II. f. 10. (1867); BECK., Mitteil. Zool. Mus. Berl., II. 83. 117. (1903).

*DIAGNOSIS*:—Antennæ orange-yellow ; eyes touching in the male for two-thirds of the length of the vertical triangle.

*DESCRIPTION*:— *Male*: Face entirely black and covered with a dense light silvery-grey tomentum, as well as with a soft yellowish-grey pubescence, except on the shallow hollow below the antennæ. The prominence of the face and the two thin longitudinal lines beside it, the upper mouth-edge and the two lines on the genæ are all shining black. Vertex shining black with black pubescence. Frons covered with hairs, which are light grey in front, but black on the middle and below, except for a very small shining black space just above the antennæ. Eyes reddish-yellow, touching for a fairly long distance; they are spotted with brown and possess short light brown hairs, which are nearly always seen only on the superior part of the head ; on this upper part the spots are more frequent, run together, and in rare cases they are entirely absent. Antennæ reddish-yellow, but at the base and upper part of the third joint brown, with a reddish-brown and fairly long and bare arista.

Thorax is shining æneous black and bears five greyish-white longitudinal stripes which never reach the lower margin, but as a rule, they end about two-thirds of the way down and sometimes half the way down the thorax ; of these the median is the narrowest, the two lateral the broadest, and the two others intermediate in breadth. Pubescence is equal, dense and light grey, but on the margin and pleuræ it is much longer and of an ashy-grey colour. Scutellum brownish-yellow, translucent, with a vestiture similar to that of the thorax.

Abdomen reddish-yellow ; the basal segment is whitish-grey on the sides and dull dark grey in the centre, with its lower margin shining black and covered with a short lead-grey pubescence. The second segment possesses on its upper margin a wide dull black band, which is crescent-shaped and supported by a median line with an expanding base (somewhat resembling an urn), which reaches to the lower margin ; this base is continued laterally in a thin line, which again widens as it reaches the side margin ; sometimes this line is interrupted in the middle so that only its widened ends remain, and are seen like fairly large spots on the lower side-margins; the segment is clothed with yellowish pubescence, about the same length as that of the thorax and its lower end has a metallic sheen. The third segment is not very unlike



the second, but the black band which originates from the upper margin does not extend more than a fourth of the way to the sides, and it is interrupted a little higher up than the middle of the segment by a transverse, yellowish, dull band; also the black markings on the lower end of this segment is much deeper than on the second segment and has a metallic sheen. The fourth segment is shining æneous-black with a fairly thick, yellowish-grey transverse band which is situated in the upper two-thirds of the segment and slightly drawn forward in its centre; this segment (as well as the third segment) possesses a light yellow pubescence, which is longer on the fourth segment than on any of the others. Venter dull yellow, but shining towards the middle of the last three segments; its pubescence is not so dense as on the abdomen, but longer. Hypopygium is asymmetrical, shining bronze and partly covered with greyish dust.

Legs shining bronze-black, except at the tip of the femora; the basal third of the posterior tibiæ and the basal halves of the anterior tibiæ are yellow; tarsi also shining bronze-black except the basal half of the metatarsus, which is rusty-yellow. Pubescence on legs fairly abundant, soft and pale, except on the inner sides of the posterior tibiæ, black; however in many specimens there are black hairs intermingled with the pale ones, even on the anterior tibiæ and metatarsi.

Wings pellucid with the costa yellowish. Squamulæ yellowish-white with a yellow fringe. Halteres yellowish.

*Female:* The female is not very much unlike the male, but usually the abdominal markings are rather different, with the addition of white colour to the yellow and black. The five longitudinal, dull, whitish-grey stripes of the thorax are much wider and more conspicuous, and at the hind-margin the two intermediate ones (one on each side of the median stripe) become expanded, joining with the stripes on each side and with the median one, thus forming an irregular light grey band; indeed these bands are sometimes so evident that it gives one the appearance of the thorax being whitish-grey with four shining æneous broad longitudinal stripes; thus Jænnicke fell into this error and in his original description of *E. tabanoides*, he describes the thorax as such: "Thorax whitish grey, yellow haired, with four large shining green-bronze coloured stripes..." The first segment of the abdomen is whitish-yellow, almost white, and somewhat dark opaque grey towards the centre. The second segment is reddish-yellow (sometimes it is quite red) and is traversed in its middle by a dull yellowish-white, often pure white band, which is constricted in the centre and as a rule extends to the side margins; the lower margin

of this segment is shining bronze and the upper margin has the same crescent-shaped marking as in the male. The third segment is very much like the second, but the transverse dull yellow band is somewhat nearer to the upper margin; the lower half of this segment, as well as that of the fourth segment is shining bronze. The fourth and sixth segments also possess broad whitish bands, which are situated in their upper halves and the fifth segment is entirely shining bronze. The seventh segment is very pointed and also all shining bronze. The vestiture of the two last segments is longer and very pale. Venter resembles that in the male, dull yellow with the shining median areas, but these appear much darker owing to the black markings of the abdomen being seen by transparency. Halteres white.

Length from  $8\frac{1}{2}$  to  $12\frac{1}{2}$  mm.

There seems to have been some confusion over the nomenclature and stability of the two sexes in this species, and this has no doubt arisen from the fact that the commonest form of the female is that which bears the least resemblance to the male as regards the abdominal markings; inasmuch as the few writers who have dealt with this species have probably not had the chance to compare large series. Jænnicke (1868) describes the female as *E. tabanoïdes* from a specimen in the Frankfort and Darmstadt Museum found by Rüppell in Massawa. Much later Becker (1902) states that he found a specimen in the Ezbekieh Gardens, Cairo, which corresponded with Jænnicke's *E. tabanoïdes* and that "it was well described by Jænnicke and easily recognisable from his description". Previously, immediately before his excellent description of *E. 5-lineatus* male, Becker also states "So far only the female was described; the male seems to be unknown, and perhaps, as it has the abdominal markings different from those of the female it is described under another name; but amongst the African species I have not been able to find any which would enable me to arrive to any definite conclusions as to its identity. For this reason I give its complete description. There is no doubt that the two sexes belong to each other, as I have always found them together in the same localities."

It is curious that both Jænnicke and Becker should have only dealt with single female specimens of *E. tabanoïdes* and that the male should never have been found. I have not the least doubt as to the correctness of Becker's concluding statement that he found the two sexes in the same locality — but I am also quite certain that, had he searched more, he would undoubtedly have found in the Ezbekieh Gardens—the other sex (*i.e.* the male) and it would

have been that of *E. 5-lineatus*. Moreover, although Jænnicke's description is an excellent one for the time, it is far from complete, and I do not consider that there are sufficient grounds for making another species of it. His "thorax whitish-grey, yellowish haired, with four shining green-bronze coloured bands, sides of thorax grey, silver grey haired" is erroneous, as the "whitish-grey" colour is due to a very fine pulverulence of that colour, which can be rubbed off with a fine camel-hair brush leaving the black background. Further his "reddish-white" dull bands of the abdomen is of rather common occurrence in the females of *E. 5-lineatus*, and in my opinion is due to change of colour in the cuticle simply from the small amount of decomposition which takes place when the insect is drying, which might be somewhat indirectly related to the colour and nature of the food of the adult. All my specimens are mounted on white card discs and in those specimens which possess the bands of the abdomen reddish instead of white, at the place where the anus comes in contact with the card, it is stained reddish. I also possess in my large series of more than fifty individuals of each sex, several intermediate stages as regards the colour of these light abdominal bands and I have every reason to believe that specimens with such colours may be considered, at the most, as *forms* or *varieties* of *E. 5-lineatus*.

The species is fairly common in Egypt, especially during the months of September and October, but I possess individuals caught in November, February, March, April, June, July, August and September. However, as a rule it is rare except in the two above-mentioned autumn months.

It is known to occur in the Ethiopian Region, and Europe and no doubt it exists in other parts of Africa and may occur in other parts of the world.

### 3. *E. TAENIOPS* WIED. (Pl. V, fig. 2).

WIED., Zool. Mag., II. 42. (1819) et Aussereurop. Zweifl., 182.43. (1830); Lw., Cefv. Vet. Akad. Forhandl., XIV. 382.39. (1857). Berl. Entom. Zeitschr., II. 230. (1858) et Dipterenf. Südafr., (396). 324.7. (1860); RICARDO, Annal. Mag. Nat. Hist., VII. (7). 106. (1901); BECK., Mitteil. Zool. Mus. Berl., II. 82.115. (1903); BEZ., Syrph. Ethiop. Region, 90.91. (*Eristalodes*) (1915).

*SYNONYMY*:—*ægyptius* WALK., List Dipt. Brit. Mus., III. 621. (1849).

*fasciatus* Lw., Germ. Fauna, 24.22. (1839)?

*pulchriceps* MEIG., System. Beschreib., III. 375.8. (*Helophilus*) (1822); MACQ., Suit. à Buff., I. 505.14. (1834); GERM., Fauna Ins. Europ., XXII. 22. (1839); LW., Stettin. Entom. Zeitg., II. 26.2. (*Helophilus*) (1841); ROND., Dipterol. Prodr., II.40.10. (1857). SCHIN., Verh. zool.-bot. Ges. Wien., VII. 397.17. (1897).

*toniopus* MIK, Wien. Entom. Zeitg., XVI. 114. (1897); GIRSCHN., Ill. Wochenschr. Entom., II. 602. (1897).

*torridus* WALK., List Dipt. Brit. Mus., III. 612. (1849).

**DIAGNOSIS:**—Antennæ dark brown; eyes touching in the male for almost one half the length of the vertical triangle, and with narrow dark bands.

This fairly large and handsome species may easily be distinguished by the dark bands on the eyes and the very indistinct thoracic stripes.

**DESCRIPTION:**—*Male:* Face with a central black stripe and two dull black stripes in the centre of the genæ. The central stripe extends from the end of the hollow below the antennæ to the end of the prominence of the face, while the two others begin near the base of the antennæ and end on a straight line with the central stripe and are thin and narrow above, gradually increasing in thickness in their base. The rest of the face, as well as the mouth and jowls, are entirely covered with golden-yellow dust and possess many yellow hairs. Frons covered with tawny dust and longish black hairs above, to shining pale on the sides below, except for a fairly large shining dark brown triangular area just above the base of the antennæ; this triangle has an elongated central depression, which extends from its base to two-thirds of its height and the base of this triangle is pale yellow. Vertex is shining black and somewhat rugose and possesses black hairs; the top of the vertical triangle is covered with orange-brown dust. Pubescence on the occiput very short, dark and inconspicuous. Eyes meet for a fairly long distance, reddish and with beautiful orange-golden iridescence; they are hairy only for a small area above, and possess (apart from their front and hind margins which are black) five uneven black stripes, which are of about the same width as the six reddish stripes left by the ground colour. Antennæ dark brown except for a small, roundish, orange spot on the upper edge of the flat and oval third joint; arista fairly long, thin and quite bare.

Thorax of an indefinite greyish-yellow colour, somewhat shining towards the centre, and with four indistinct darker stripes; the two side stripes are as a rule inter-

rupted by a fairly large space in their middle, which space is equal in length to that of the upper end of the stripe, the sutures being situated in the centre of these interruptions; the lower halves of these stripes extend some distance below the centre of the thorax and gradually decrease in width downwards; the two middle stripes extend from the top of the thorax to about its middle. Postalar calli very large, prominent and shining dark brown. Scutellum orange-yellow, translucent and shining. Pubescence of the thorax and the scutellum is light yellow, thick all over but short and even.

Abdomen orange-yellow with transverse black markings; the basal segment is very pale yellow and shining; the second segment dull orange-yellow, except in the centre, where it is yellowish-white and its upper and lower margins which are dull black, forming two fairly large and conspicuous black bands, which are thicker towards the centre and gradually become thinner towards the side margins; the third segment has its upper half whitish-orange, except for its extreme upper margin which is deep orange, and for a black elongate spot in the centre of this margin; the lower half of the segment is dark brown above, gradually getting deeper below until it reaches the lower margin, which is deep metallic black and traversed by a thick wavy whitish-yellow band, which, on the sides of the segment is situated about the middle, and in the centre much higher up, its upper edge almost touching the upper margin; the lower end of this segment is very shining; the fifth, sixth and seventh segments are black and almost completely retracted in the fourth. Pubescence of the abdomen mainly following the ground colour, fairly dense but short and slightly longer and uniformly paler on the fourth segment. Venter orange-yellow and opaque, rather deep coloured in the centre and much lighter at the base; the basal half of the fourth segment is brown and its lower half black; its pubescence is very thin and scattered and almost all pure white.

Legs with the front and hind femora dark brown and with the tip of the two front pairs yellow; hind tibiæ dark brown, almost black, except at the base where they are very pale yellow; they are compressed about the middle and rather twisted. Front and middle tibiæ have their basal halves pale yellow and their distal halves brown; front and hind tarsi with their dorsal surface dark yellow, and their tips dark brown dorsally, but paler below. Vestiture of legs mainly following the ground colour, fairly short except on the hind femora and tibiæ, where they are coarser and longer.

Wings pale yellowish-brown near the base, with a small

quadrate spot under the end of the subcostal vein, in which spot there is a distinct cross vein; the veinlet after the closed cell R1 is prolonged towards the tip of the wing and this prolongation is about half the length of that in *E. tenax*. Vena spuria rather faint and very pale yellow; Anal 2, undulated. Squamulæ very pale yellow, thoracal pair very large with a dark brown edge and with a fringe only on the lower half; alar pair much smaller with a thick fringe of longer pale hairs. Halteres pale yellow.

*Female* is very similar to the male, but as a rule the eyes are devoid of the golden iridescence, the ground colour of the abdomen somewhat less bright, and the hind legs lighter in colour.

Length from 11 to 14 mm.

*E. taniops* is one of the commonest of the Egyptian Syrphidæ and is found nearly the whole year round. My records date from October to the middle of August. It is very widely distributed and has been recorded from the Ethiopian Region and Europe, and probably exists in many other parts of the world.

#### 4. *E. TENAX* L. (Pl. V, fig. 1).

LINN., Syst. Nat., X. 591. (*Musca*) (1758), XII. II. 984.32. (*Musca*) (1767) et Faun. Suec., 1799; (*Musca*) (1761); RÉAUM., Mém. Ins., I. t. II. (1734) et IV t. XX. f. 8. (—) (1738); SWAMMERD., Biblia Nat., I. t. XXXVIII f.g. (—) (1737); GEOFFR., Hist. Ins., II. 520. 52. (—) (1764); O.F. MULL., Faun. Friedrichsd., 716, (*Musca*) (1764); FABR., Syst. Entom., 765. 15. (*Syrphus*) (1775), Spec. Ins., II. 425. 19. (*Syrphus*) (1786), Entom. Syst., IV. 288. 36. (*Syrphus*) (1794) et Syst. Antl., 238. 24. (1805); HARR., Expos. Eng. Ins., 41. t. X. (2) f. 1. (*Musca*) (1776); GMELL., Syst. Nat., V. 2870. 32. (*Musca*) (1788); VILL., Entom. Linn., III. 436. 81. (*Musca*) (1789); ROSSI, Faun. Etr., II. 285. 1455. (*Syrphus*) (1790); PANZ., Faun. Germ., XIV. 23. 24. (*Syrphus*) (1794); CEDERH., Faun. Ingr. Prodr., 303. 952. (*Syrphus*) (1798); SCHRANK, Fauna boica, III. 113. 2427 (*Musca*) (1803); SCHELL., Genr. Mouch. Dipt., 52. t. IX. f. 1. (*Syrphus*) (1803); LATR., Hist. Nat. Crust. Ins., XIV. 364. 3. (1804) et Gen. Crust. Ins., IV. 324. (*Elophilus*) (1809); SHAW, Gener. Zool., VI. 380 t. 146. (*Musca*) (1806); DWIG., Primit. faun. Mosqu., 178. 635. (*Musca*) (1802); ILLIG., Faun. Etr. Rossi, II. 441. 1455. (*Syrphus*) (1807); DONOV., Brit. Ins., XVI. 66. t. 574. (*Musca*) (1883); FALL., Dipt. Suec. Syrph., 26. 17. (*Syrphus*) (1817); MEIG., System. Beschreib., III. 385. 4. (1822); MACQ., Rec. Soc. Sci. Lille. 1827, 310. (162). 3. t., III. f. 5. (1827) et Suit. à Buff., I.

504. 11. (1843); ZETT., Ins. Lapp., 594. 7. (*Syrphus*) (1838), et Dipt. Scand., II. 661. 7. (1843). VIII. 3113. 7. (1849), XI. 4301. 7. (1852), XII. 4651. 7. (*Syrphus*) (1855); WESTW., Introd., II. 559. f. 131. 7-9; (1840); ERICHS., Entom., t. II. f. E. c. e. (1840); WALK., List Dipt. Brit. Mus., III. 610. (1849) et Ins. Britann., I. 243. 1. t. IX. f. 5. (1851); ROND., Nuov. Annal. Sci. Nat. Bologna, (3). II. t. IV. f. 2. (1850) et Dipterol. Prodr., II. 42. 9. (1857); HAL., Stettin. Entom. Zeitg., XII. 139. (1851); LETZNER, Arb. schles. Ges., 1856. 117. (1856); FRNLD., Verh. zool.-bot. Ges. Wien, VI. 439. (1856); F. MULL., Trans. Entom. Soc. Lond., VI. 336. (1851) et Entom. Monthly Mag., VIII. 273. (1872); SCHIN., Verh. zool.-bot. Ges. Wien, VII. 390. 1. (1857) et Fauna Austr., I. 334. (1862); BONSD., Finnl. tvaving. Ins. I.222.7. (*Syrphus*) (1861); BOWERB., Entom., VI.547.(1872); OST.-SACK., Cat.N.A. Dipt., 2 ed., 249. 228. (1878), Entom. Monthly Mag., XXIII. 97. (1883), Trans. Entom. Soc. Lond., 1884. 489. 1. (1884), Bull. Soc. Entom. Ital., XXV. 186. (1893), On the so call. Bug., Heidlg. (1894) et Berl. Entom. Zeitschr., XL. 142. (1895); BATELLI, Bull. Soc. Entom. Ital., XI. 77. t. I-V. (1879), et Ann. Mag. Nat. Hist., (5) III. 94. (1880); MEINERT, Trophi Dipt., t. v. f. 21. (1881); WILLIST., Syn. N.A. Syrph., 160. t. VII. f. 7. (1886); HUDSON, Trans. N. Zeal. Instit., XXII. 187. (1889); RIL. et How., Ins. Life, II.262. (1889) et III. 22. (1890); J.B. SMITH, Trans. Am. Ent. Soc., XXII. 334. f. 18. (1890) et Trans. Am. Phil. Soc., XIX. t. 1. f. 3., t. III. f. 5. 10. (1896); GRIFF., Bull. Mus. Torino, VIII. (143). 3. (1893); SMITH, Entom. Monthly Mag., XXVI. 240 (1890); BUCKTON, Nat. Hist. Er. tenax, (1895); MIALL, Nat. Hist. Aquat. Ins., 1 ed., 198. (1895) et 2 ed., 198. f. 70-77. (1903); TYL-TOWNS., Trans. Am. Ent. Soc. XXII. 49. (1895); GIRSCHN., Ill. Wochenschr. Entom. II. t. III. f. 17. 18. (1897); WANDOLL., Zool. Anz., 1898. 289. f. 2. (1898); PLATEAU, Mém. Soc. Zool. France, 1900. 283. (1900); MEIJ., Entom. Tijdschr., XXXVIII. 21. f. 21. (1900) et Zool. Jahrb., XIV. t. VII. f. 39. (1900) et t. XXXV. f. 127-128. (1901) et XV. 678. f. 43. (1902); VERR., Brit. Fl., VIII. 505. 4. f. 350-352.(1901); HUTTON, Trans. N. Zeal. Instit. XXXIII. 36. (1900); CHAGNON, Nat. Can., 1901. 51. 1. (1901); W.W. SMITH, Entom. Monthly Mag. (2). XII. 300. (1901); How., Insect Book, t. XX. f. 22. (1902); ALDRICH, Cat. N.A. Dipt., 389. (1905); BEZ., Syrph. Ethiop. Region, 93. 94. (1915); LUNDB., Dipt. Danica, V. 422-425. (1916).

*SYNONYMY*:—*arbustorum* SCHRANK, (*Nec. L.*) Enum. Ins., 445. 902 (*Musca*) (1781).

*fuscus* SCOP., Ent. Carn., 355. 961. (*Conops*) (1763); VILL., Entom. Linn., III. 461. 132. (*Musca*) (1789); SCHIN., Verh. zool.-bot. Ges. Wien, VI. 418. (1856).

*porcinus* DEG., Ins., VI. 98. 1. (*Musca*) (1776) et ed. Gœtze, VI. 45. 1. (*Musca*) (1782).

*silvaticus* MEIG., System. Beschreib., III. 388. 8. (1822).

*vulgaris* SCOP., Entom. Carn., 354. 960. (*Conops*) (1763).

*vulpinus* MEIG., System. Beschreib., III. 388. 7. (1822); SCHIN., Verh. zool.-bot. Ges. Wien, VII. 392. 3. (1857) et Fauna Austr., I. 334. (1882).

*var. alpinus* STROBL (*nec.* PANZ.) Mittheil. Naturwiss. Ver. Steiermark, XXIX. 185. (1893).

*var. campestris* MEIG., System. Beschreib. III. 387. 5. (1822); MACQ., Rec. Soc. Sci. Lille, 1827. 312. (164) 4. (1827) et Suit. à Buff., I. 505. 12. (1834); Lw., Programm. Posen, 38.4. (1840) et Isis, 1840. 574. 4. (1840).

*var. hortorum* MEIG., System. Beschreib., III. 387. 6. (1822) et VII. 143. 4. (1840).

*vulpinus* MEIG. = TENAX L. *var. hortorum* MEIG.

**DIAGNOSIS:**—Antennæ blackish; eyes very hairy, some of the hairs being concentrated in two bands; hind tibiæ compressed, ciliate on upper and under sides.

A common large species resembling the Hive Bee.

**DESCRIPTION:**—*Male:* Face with a broad central black stripe, which is shining, and extends from above the antennæ down to the mouth; on the middle of the face this stripe occupies more than one third of the width, but it narrows near the mouth, and is quite free from pubescence about its centre; the sides of the face are entirely covered with yellow dust and possess many yellow hairs; pubescence on occiput is long and shaggy on the upper part, and longer and denser on the lower half. Eyes very hairy and there are two rather indefinite stripes of dense brown hairs running down each side of the middle of the eye, the other hairs being more scattered and paler. Antennæ dark brown, thinly covered with yellow dust, with the third joint bearing a long thin and bare arista.

Thorax shining brownish-black, but rather dull in front and all the thorax is somewhat obscured by the abundant, fairly short tawny pubescence; it is devoid of bristles or hairs except for a tuft of pale hairs on the postalar calli. Scutellum brownish-yellow, rather hidden by the pale hairs (which are of about the same length as those on the postalar calli) which it bears. Abdomen with yellowish-orange markings varying very much in extent from almost absent, up to covering nearly all the second and third segments, except for some dorsal markings. Pubescence shorter than



on the thorax and not so erect and consequently the ground colour appears blacker and more shining.

Legs usually black, with the knees and the basal third of the front and the basal half of the middle tibiæ yellow; the base of the middle tarsi is also yellow. Pubescence on the anterior legs fairly abundant, very equal and of a faded yellow colour; on the hind legs the femora bear an abundant tawny pubescence, and beneath, a row of coarse black hairs, while the tibiæ bear dark tawny pubescence, with a tuft of coarser black hairs, just after the middle on the under surface; the tibiæ are rather compressed about the middle, and somewhat twisted.

Wings pale brownish on the front half, with a small dark brown spot under the end of the subcostal vein, in which spot there is an indistinct cross-vein. The veinlet after the closed cell R1 is prolonged towards the tip of the wing; Anal 2 much undulated. Squamulæ dull pale yellowish, the thoracal pair are large and have dense coarse yellowish fringes; the alar ones are also rather large and have a moderately long, simpler, though denser and coarser fringes. Halteres pale yellow, head of club, brown.

*Female*:—Very similar to the male, but the eyes are usually more bare, the broad vertex shining black with black hairs, and separated from the black triangle above the antennæ by the union of the dust on the sides of the frons, though in the region of the union the dust gets thinner and in the hollow below the antennæ the dust covers both sides of the face; the frons, as a rule, has yellow hairs, but sometimes black, or yellow and black hairs intermixed.

Length from 16 to 18 mm.

The abdomen varies very considerably in its pale markings and some specimens I possess are entirely black, except for the very thin orange-yellow hind margins of the second and third segments.

*E. tenax* is the largest and most widely distributed species of our Egyptian Syrphidæ; it is also fairly common. I possess specimens from Cairo, Alexandria, Mariout, Fayoum, Wadi Hoff, etc. and it will certainly be found in many other localities; my dates extend from January to January of the following year. It is also probably the most widely distributed species of the Syrphidæ in the world, and Verrall states that it occurs wherever man has established any system of drainage, whence it is essentially known as the Drain Fly, though from its resemblance to the male of *Apis mellifica* it is known in England as the "Drone Fly". It occurs in nearly all Europe, India, China, Japan, Cape of Good Hope, North America, Ethiopian Region and New Zealand.

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## 8. HELOPHILUS MEIG.

MEIG., System. Beschreib., III. 368. CXV. (1822).

SYNONYMY:—*Tubifera* MEIG., Nouv. classif., 34. 68. (1800).

*Elophilus* MEIG., in Illig. Mag. f. Ins., II. 274.78. (1803).

*Dolichogyna* MACQ., Dipt. Exot., II. 2., 65.18. (1842).

*Liops* ROND., Dipterol. Prodr., II. 33. (*Lejops*) (1857).

*Mesembrius* ROND., Dipterol. Prodr., II. 50. *nota* (1857).

*Anasimyia* SCHIN., Catal. syst. Dipt. Europ., 108. (1864).

*Eurymyia* MIK, in BECK., Fauna v. Hernstein, 11. 2., 68. (1885).

*Eurimyia* BIG., Annal. Soc. Entom. Fr., (6). III. Bullet., XX. (1883).

*Eurhimyia* BIG., Annal. Soc. Entom. Fr., (6). III. 226. 230. (1883).

*Eurinomyia* MIK, Wien. Entom. Zeitg., XVI. 115. (1897).

*Parhelophilus* GIRSCHN., Illustr. Wochenschr. f. Entom., II. 604. (1897).

This genus is closely allied to *Eristalis*, but distinguished by cell R1 which is open, the bare eyes, and the less pubescent and longitudinally striped thorax.

Face with a central knob and with a more or less produced upper mouth-edge; eyes always bare and nearly always well separated in both sexes, although the separation is less in the males than in the females and in our only Egyptian species, (*Mesembrius capensis*) they are almost touching in the male. Antennæ moderate and bearing dorsally a bare and simple arista. Thorax dull blackish with conspicuous longitudinal yellowish lines and less pubescent than in *Eristalis*. Scutellum usually brownish-yellow.

Abdomen rather dull black with conspicuous yellowish-orange markings on the second, third and sometimes also the fourth segments; pubescence more or less dense. Legs strong and blackish; the hind femora are thickened and the hind tibiæ curved.

Wings very similar to *Eristalis* but cell R1 is opened instead of being closed. Squamulæ very large.

**SYNONYMY:**—I cannot do better here than give Verrall's opinion which is as follows "As is the case in most old genera it is "difficult to absolutely limit the original formation of the genus "*Helophilus* as now accepted. A genus *Elophilus* was proposed by "Meigen in 1803 for "*Syrphus tenax, nemorum, florens, pendulus* "etc. *Fabr.*" which might appear to be prior to and identical with "*Eristalis* ; but at the same time Meigen proposed a genus *Helio-* "*philus* for '*Syrphus sylvorum* etc. *Fabr.*' In 1804 Meigen gave a "most unsatisfactory distinction between *Elophila* with 'die Borste "gefiedert" and *Heliophilus* with 'die Borste einfach.' None of these "names can honestly claim priority, because whichever may be "considered the type species may well belong to some other very "distinct species and consequently in my opinion Meigen's limita- "tion of these genera in 1882 is the first firm foundation upon "which we can build, and he then limited *Helophilus* to the group "which is now included under that name and at the same time he "well distinguished the allied genera or groups of *Eristalis*, "*Mallota* and *Merodon*, and I cannot see any reason for differing "from his definitions. It is quite certain that we are not justified "in applying laws of priority *now* which were not *then* recognised, "unless they were unrecognised, admitted, or accidental and obvious "synonyms. We ought, as far as possible, to accept the practice of "the time in which the practice was adopted, or else the practice "which we adopt now is almost certain to be upset by the next "generation, and no approximation to finality will ever occur. I "therefore accept and defend the modern limitations and the "present acceptance of the name of the genus *Helophilus*, even "though I may allow that certain groups are entitled to subgeneric "rank."

The members of this genus mainly occur in marshy districts and are nearly all attracted by *Compositæ* and *Umbelliferae*.

Verrall says that the metamorphoses of scarcely any species are known, but Meigen states that *H. pendulus* has been bred from putrid water, which quite agrees with the habits of the species and is only natural in connection with its obvious relationship to *Eristalis*.

#### 1. H. (MESEMBRIUS) CAPENSIS MACQ.

(Pl. V, fig. 5., Pl. I, fig. 12 and Pl. II, figs. 4, 7 and 9).

MACQ., Dipt. Exot., II. 2., 62.2. t. XI. f. 3. (*Helophilus*) (1842); Lw., Dipterenf. Südafr., I. 313. *Anmerk.* 2. (*Helophilus*) (1860); KERT., Catal. Dipteror., VII. 250. (*Tubifera*) (1907); BEZ., Syrph. Ethiop. Region, 95.97. (1915).

*SYNONYMY*:—? *caffra* Lw., Cefv. Kongl. Vet. Akad. Forhandl., XIV. 1857.380.27. (*Helophilus*) (1858) et Dipterenf. Südafr., I. 312. 1. (*Helophilus*) (1860); KARSCH. Berlin. Entom. Zeitschr., XXXI. 381.51. (*Helophilus*) (1887).

*DIAGNOSIS*:— A fairly large and handsome fly which is easily distinguished by its wing venation (cell R1 open), the tuft of globiferous hairs on the joint between the hind tibiæ and tarsi of the male and by its bright colour.

*DESCRIPTION*:— *Male*: Face covered with shining pale yellow dust and hairs except in the shallow hollow below the antennæ and on a rather shining median black stripe which extends to the rather produced mouth; frons also covered with pale yellow shining dust and hairs (sometimes it is almost pure silvery-white) except for a small shining brown and bare triangular piece at the base of the antennæ; the light yellow hairs on the frons are more scattered and less numerous than on the face; vertex black with some blackish hairs and the front third of the vertical triangle with yellow dust; occiput entirely covered with yellow dust and a few very short, pale and inconspicuous hairs above. Eyes black, bare, not quite meeting. Antennæ blackish and the third joint which is not long possesses a bare, simple, dark brown arista; the two basal joints possess some black, erect bristles and those on the second joint are longer.

Thorax dull black, with five conspicuous longitudinal stripes, made of orange-yellow dust; the central stripe is by far the narrowest and reaches only half way down the disc; the two intermediate stripes are straight and even and reach about four-fifths the way down, where they meet and spread to the base and laterally to the lateral stripes. Pubescence rather abundant, but very short except on the sides where it is longish, yellow and tufted. Scutellum large, orange-yellow, transparent, with a medium pale yellow pubescence.

Abdomen about as long as the thorax (or even longer) tapering gradually towards the apex, dull black with bright orange side-markings; the first segment is dull black with a very straight grey hind margin; the second segment has the sides all orange which colour extends on the disc in a large blunt triangle leaving about the middle sixth of the disc black, and connecting the black base with a black band which runs right across the disc (but not to the side margins) just before the narrow orange hind margin; this black band is widest at its middle and gradually narrows to a point near the side margins, the black markings on this segment thus

resembling an urn. The third segment has its upper half nearly always all orange, while its lower half possesses a black band which is deeper and wider than the one on the previous segment and is also widest at its middle; this black band runs right across the disc to the side-margins before the orange hind margin; sometimes this black band is continued upwards in the centre in a thin black line to the upper margin. The fourth segment is blackish with an orange hind margin, but is rather inclined to grey near the front margin. The fifth segment is black and rather retracted in the fourth. Pubescence very short and even on the three first segments, where it is usually pale yellow; on the fourth and fifth segments it is longer and denser. Venter orange with the black dorsal markings showing through by transparency; the sixth and seventh segments are black and completely retracted into the fifth; pubescence thinner but longer than on the dorsum. Hypopygium asymmetric and dull brown. Legs black and orange, the orange being on the apical sixth of the front and middle femora, the basal halves of the front and middle tibiæ and the middle metatarsi; the hind legs are entirely black except the apices of the tibiæ which are brownish; the hind femora are considerably dilated and the hind tibiæ are conspicuously curved, (Pl. II. fig. 4) commencing with a jerk soon after the base; these hind tibiæ possess beneath, an elongated groove, which is bordered on each side by a fairly prominent ridge; the outer ridge is hollowed beneath at the tip and resembles a short spine, while the inner one is prolonged lower down to the base, also hollowed beneath at the tip and resembles a strong curved tooth; on the joint between the hind tibiæ and tarsi there is a tuft of remarkable black globiferous hairs, (Pl. II, fig. 7.). Pubescence on the anterior legs abundant and orange on the outer side only, the inner side being quite bare and somewhat shining; on the outer side of the posterior tibiæ it is longer, more tufted and yellow, while on the inner side it is blackish.

Wings grey and shining; there is a small dark brown spot under the end of the subcostal vein and a distinct cross-vein from the subcostal vein to Radius 1; Median cross-vein much undulated. Squamulæ large and pale yellow with dense pale yellow fringes and the disc orange. Halteres yellow.

*Female*: Similar to the male but differs from it by the wide separation of the eyes and by the pubescence of the thorax, abdomen and legs being shorter and somewhat paler; also the central black longitudinal band on the second segment of the abdomen is very often interrupted in the middle, leaving only the top and the base of the urn-shaped marking; the tibiæ, although conspicuously

curved, are simple and free from any grooves or ridges, and the black globiferous hairs between the tibiæ and tarsi are absent.

This species seems to be very rare in the neighbourhood of Cairo, but in Alexandria, I found it rather commonly in July, August and September, in wet and boggy places on the edges of the Mahmoudiah Canal and the Salt Lakes, where I have obtained a very large and handsome series. The only two other specimens known from other localities are both in my collection, the first was captured at Kerdacé (near the Giza Pyramids) in November and the second in Koubba gardens in October. This is an interesting and important addition to the Syrphid fauna of Egypt, as I believe this to be its first record from so far North of Africa.

It is known to occur in South Africa, British East Africa, Nyassaland, Uganda and in the Ethiopian Region.

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## MILESINÆ

### 9. SYRITTA ST-FARG. & SERV.

ST-FARG. & SERV., Encyclop. Méthod., X. 888. (1825).

*SYNONYMY*:— *Coprina* ZETT., Ins. Lapp., 584.45. (1838),  
*nec.* ROB.-DESW., 1830. Dipt.

*Planes* ROND., Archivio per la Zoolog., III.9. (1863).

*Xylota* WESTW., (*nec* MEIG.), Introd. mod. Classif., Synopsis,  
136. (1840).

Face with a sharp central keel; the vertex of the male is long and narrow; frons bare, short and slightly produced. Eyes large, quite bare, touching for a fairly short distance in the male, but widely separated in the female. Antennæ moderate with a rather long and rounded third joint, which bears dorsally a long and bare arista. Thorax rather long and with the base, humeri, the sides down to the suture, as well as all the pleuræ, covered with pale, light coloured dust. The abdomen is thin, elongated and brightly coloured with yellow and black; the anterior margin of the second segment runs forward at each side, for a distance equal to nearly half the length of the first segment. Legs with the two anterior pairs quite normal but with the hind femora extremely dilated and possessing short rigid spines beneath. Wings with the radio-median cross-vein upright and placed at the middle or cell M2.

This genus shows some relationship with *Eumerus*. Although it is a very small genus, it is very widely distributed and seems to be exceedingly abundant wherever it is represented. It occurs commonly in the Ethiopian Region, Nubia, Aden, Sierra Leone, Senegal, Madagascar etc., Asia, North America, New Zealand, throughout Europe and in Eastern India.

Not much is known of the metamorphoses of this genus but I have bred our common *E. spinigera* from the rhizomes of the German iris (*Iris germanica*). The larvæ were found infesting the rhizomes in company with a few larvæ of *Eumerus amœnus*\* but the rhizomes, I think, had been previously attacked by the "bulb mite," (*Rhizoglyphus hyacinthi*), and in all probability the larvæ of the flies had not been attracted until decomposition had started. Mr. F.C. Willcocks also bred *S. spinigera* from larvæ found in the growing point of Banana trees infested with eelworms, and three specimens of adult *S. spinigera* exist in the collection of the Entomological Section, Ministry of Agriculture, labelled "on rotten stems of pawpaw (Tel-el-Kebir)."

According to Lundbeck, Beling has described the larva of *Syrirta* as being 10 mm. in length, almost cylindrical, a little attenuated towards both ends; it is dirty yellowish, the dermis is tough and short-spinulose; the segments with about four corrugations each; on the ventral side are seven pairs of small prolegs with spines; the prothoracal segment has at the front margin numerous, short, brown, recurved spines in transverse rows; above the mouth-opening are as usual the two-jointed, antennæ-like organs; at the posterior end of the body are on each side three filaments, the posterior one being the largest; at the end itself is a brown, somewhat flattened posterior spiracular process; it has a longitudinal dividing line above and below and bears the spiracles on the flat end.

The pupa is arched, rounded in front, slightly attenuated behind; near the anterior end are two short, cylindrical, yellow anterior spiracular tubes; they are a little distant, directed upwards and diverging, and they have the somewhat thickened apical half beset with small tubercles, partly arranged in rings; at the posterior end is the larval posterior spiracular process, directed a little upwards. The length of the pupa is about 6 mm.

The species of *Syrirta* are remarkably good and dainty hoverers and are characterised by their strongly thickened hind femora. Our common *S. spinigera* may be seen everywhere hovering over flowers and plants. I have watched the copulation of *S. subtilis*: the male hangs in the air for one minute or more over the female which is sitting on a leaf or flower, then he darts down on the female and soon after, copulation takes place, — the pair remaining in copula from three to four hours.

Only about 7 species of this genus are known from the Palæartic region, two of which occur in Egypt.



## TABLE OF EGYPTIAN SPECIES.

- 1 (2) Vena spuria not distinct, nearly obsolete ; hind femora with a thick and strong spine near the base ; first antennal joint mostly black ; hypopygium with lamella possessing a tuft of erect bristly hairs, (Pl. VI, fig. 1, & Pl. II, figs. 8 & 12)..... 1 *spinigera* LW.
- 2 (1) Vena spuria distinct and black, like the other veins ; hind femora without any basal strong spine ; antennæ yellow ; hypopygial lamella practically without any erect bristly hairs, (Pl. VI, fig. 2)..... 2 *subtilis* BECK.

## 1. SPINIGERA LW. (Pl. VI, fig. 1 &amp; Pl. II, figs. 8 &amp; 12).

Lw., Stettin. Entom. Zeitg., IX. 331. (1848), Cfv. vet. Akad. Farn., XIV. 377.12. (1857) et Dipterenf. Südafr., 301.5. (1860) ; SCHIN., Verh. zool.-bot. Ver. Wien., VII. 425.2. (1857) ; ROND., Atti. Soc. Ital. Sci. Nat. Milano, XI. 25. (1868) ; BECK., Mitteil. Zool. Mus. Berl., II. 89.124. (1903) et Zeitschr. f. System. Hymen. u. Dipt., VII. 233.292. (1907) ; BEZ., Ditt. Eritrei, II. 18.171. (1908), Ditt. raccolti d. Leo. Fea, 39. (438). 32. (1911-12), Syrph. Ethiop. Region, 5. 174., 105.111. (1915) et Syrph. æthiop. Mus. Nation. hungarici, 11 (19). 54. (1921).

SYNONYMY:— ? *flaviventris* MACQ., Dipt. Exot., II. 2., 75.2. (1842) ; Lw., Dipterenf. Südafr., I. 300.3. (1860) ; SCHIN., Nov. Reise, Dipt., 367.93. (1868).

? *nigricornis* MACQ., Dipt. Exot., II. 2., 74.1. t. XIV. f. 1. (1842) ; Lw., Dipterenf. Südafr., I. 300.2. (1860).

*armipes* THOMS., Eugenie Resa, Dipt., 503.99. (1869).

*spinigerella* THOMS., Eugenie Resa, Dipt., 502.98. (1869).

*vitripennis* BRG., Annal. Soc. Entom. Fr., (6) V. 248. (1885).

*DIAGNOSIS*:— An exceedingly common, rather small, narrow, almost bare fly, which can be at once recognised by the absence of the vena spuria, the very thick hind femora, which are serrate beneath and possessing individual strong spines and a large, stout basal spine ; antennæ dark brown.

*DESCRIPTION*:—*Male*: Face as well as the frons entirely covered with pure silvery white or pale yellowish-white dust, and with a few white hairs on the lower part of the face at the sides; face descending below the antennæ in a gentle curve to the upper mouth-edge, which is its most prominent part ; below this the face retreats to the lower mouth-edge, and thence in a straight line to the jowls ; the lower end of the vertex is thin and rather flat, and about its middle it is a little wider owing to the incurved margin of the eyes (but not so much as in *Sphærophoria*); the jowls and all the vertex are covered with pure silvery-white dust and possess a few white hairs, but the uppermost part of the occiput (immediately behind the vertex) possesses a few yellowish hairs, and the dust is usually greyish. Vertex long, possessing silvery-white dust and a few hairs on the front half of the vertical triangle, but with its hind or upper part black and bearing inconspicuous yellowish pubescence. Frons quite small, little produced, and quite free from pubescence. Eyes meet for a distance which is somewhat longer than the length of the frons, with the facets on the upper front part rather dilated. Antennæ with the two basal joints blackish or reddish-brown but with the third joint either entirely blackish or in great part black with the tip very dark reddish-brown ; arista very dark reddish-brown, gradually tapering towards the tip. All the three joints, especially the third possess exceedingly fine whitish dust.

Thorax rather dull black, thinly punctate and with the postalar calli reddish-brown or dark brown, and with traces of two lighter lines on the front part of the disc; the humeri and the sides down to the suture, as well as the pleuræ are covered with dust which varies from pure silvery-white to whitish-grey ; in the elongate hollow immediately above the postalar calli it is also greyish. The pubescence is extremely fine, short and inconspicuous, but fairly dense, even and uniformly pale. Scutellum very flat on the disc and possessing short pale hairs with a few tiny inconspicuous bristles at the tip.

Abdomen with the basal segment dull black but greyish on the two basal corners. The second segment is yellow, with a broad triangular blackish band always present on the lower margin ; the upper margin is usually yellow like the rest of the abdomen, but sometimes, it bears a small triangular

blackish band ; rarely this segment possesses a median black line, which joins the two triangular bands on the upper and lower margins, as in *S. subtilis*. The third segment is entirely yellow, except for a broad dark brown band just above the lower margin which is always yellow and shining ; sometimes this band is rather broader than usual and occupies one fourth of the length of the segment, and its upper margin is continued upwards in the middle of the segment as an obscure blackish line, which, however never reaches the shining upper margin of the segment. The fourth segment is very shining æneous-black, with its two basal corners broadly greyish and its lower end more or less deep reddish-brown. The fifth segment is very small, rounded and shining black. The pubescence on the abdomen is very inconspicuous and uniformly pale, except for a remarkable fringe of white hairs on the upper lateral margins of the second segment (where it runs forward at the sides of the first segment), which constitutes the only obvious pubescence on the abdomen. Venter transparent, blackish on the basal half of the first segment, yellow to the end of the third segment, then blackish to the tip of the genitalia. Hypopygium small with a fairly large lamella which possesses a tuft of erect, long, bristly hairs which ends beneath the base of the fourth segment. (Pl. II, fig. 12). Pubescence very short, inconspicuous and uniformly pale.

Legs black and orange; the two anterior pairs are entirely orange-yellow with the knees rather broadly pale yellow, and the coxæ and trochanters dark orange-brown; their pubescence is fairly short, whitish and inconspicuous. The very thick hind femora are entirely shining and have their basal half (or more) orange beneath, but black above, except for an orange-brown band about their middle, which is really the extension of the orange colour below ; the distal half is blackish above and almost entirely blackish below, except for a longitudinal orange-brown band. The femora, (Pl. II, fig. 8), possess a strong and thick spine near the base, beneath, which is orange but black at the extreme tip; this tip ends in more than two minute, blunt and roundish spines; besides this large spine, the femur possesses on its basal half, beneath, from two to six much smaller black spines arranged almost in a straight line, but sometimes there is one near the large spine and two or three others in a group and situated at about the middle of the femur. The apical third of the femur is deeply serrated and the serration is on a raised ridge, behind which, near the distal end, there are three or four much longer spines. The hind tibiæ are curved and blackish, with the base light yellow, and a broad ring just after the middle yellow. The hind tarsi are darkened above and the hind coxæ (which are dark

reddish-brown, as well as the trochanters), are covered with thin whitish dust. The pubescence on the hind legs is also very short, pale and inconspicuous.

Wings pellucid with the stigma and the subcostal cell pale yellow, as well as the other veins at the base; the vena spuria is very often obsolete, and sometimes with a very short faint line present at about its centre. Squamulæ whitish with their margins yellowish; the thoracal pair possess long delicate white fringes which are composed of compound hairs, but the alar pair with coarser, simple whitish fringes which are only about one third of the length of those on the thoracal pair. Halteres pale yellow with the base brownish.

*Female*: Rather similar to the male but larger and stouter. Frons all covered with silvery white dust and some white hairs, except on a short space just before the vertex which is somewhat shining black together with the latter. The front facets of the eyes are less dilated than in the male. The second segment of the abdomen always with a central black band, which meets the upper and lower triangular bands and thus giving the yellow part of the segment the appearance of being two large spots with almost parallel margins; these yellow spots are usually whiter towards their distal ends, but redder towards the sides. Often the triangular band at the base of the segment is absent, leaving the basal part of the segment yellow, except in the centre, owing to the central longitudinal band, which always reaches the basal margin. The extreme lower margin of the second segment is yellowish. The third segment has its lower half blackish with the broad longitudinal median band reaching the basal margin, thus leaving the two broad corners of the basal half of the segment whitish-yellow; the lower margin of this segment is yellowish-brown. The fourth segment is elongated, tapering and pointed and entirely shining black, except for two yellowish-white spots on the basal corners and the extreme tip yellowish. The first three segments are all dull except for the lower margins of the second and third segments and three spots (one in the centre near the base and two on the sides near the lower margin), on the third segment, which are shining. Venter rather more opaque and darker than in the male. Hind legs with the femora usually more orange, the spine near the base, below, much smaller and weaker than in the male, and with the hind tarsi usually much darker above.

Length from  $7\frac{1}{2}$  — 9 mm.

*S. spinigera* is one of the commonest Egyptian Syrphids and one of the most widely distributed. My records date from January to November. It is known to occur in Africa, Asia Minor and South of Europe.

2. *S. SUBTILIS* BECK. (Pl. VI, fig. 2).

BECK., Mitteil. Zool. Mus. Berl., II. 89.125. (1903).

*DIAGNOSIS*:— Vena spuria distinct and black like the other veins; hind femora without any strong basal spine; antennæ entirely yellow.

*DESCRIPTION*:— *Male*: Very similar to the preceding species, but easily distinguished from it by the following characteristics, the general colour of the dust and hairs on the face and frons which is greyish-yellow, and by the markings of the abdomen which are very similar to those of the female of *S. spinigera*. Vertex shining black with two roundish spots of greyish-yellow dust on the base and sides of the front ocellus. The pubescence on the thorax is much shorter than in *S. spinigera*, being hardly perceptible with a strong hand lens, and the colour of the dust on the sides of the thorax, which extends from the humeri to the sutures, is ochraceous.

The second segment of the abdomen has the markings practically identical with those of the corresponding segment of the female of *S. spinigera*, but here the whitish colour on the discal ends of the yellow markings is absent. The third segment also has its sides yellow and possesses a dull black band on its lower margin, the depth of which is equal to about one third the length of the segment: in addition, the central black longitudinal line joins the band on the lower margin, but ends well before the basal margin, so that the two large yellow side margins meet above; the lower margin of this segment is similar to the corresponding one in the preceding species, but its basal corners are less broadly greyish. Venter rather opaque. Hypopygium with the lamella not possessing any tufts of erect bristles. The colour of the legs is very much like that of *S. spinigera* but the hind metatarsi are rather darkened above; the hind femora do not possess the strong basal spine below, but only a row of four or five much smaller spines on the basal half; the apical third of the hind femora is deeply serrated below as in the preceding species.

Wings pellucid, with the vena spuria as black and as distinct as the other veins; the extreme bases of the veins, the stigma and the subcostal cell, are yellowish.

*Female*: Very similar to the male but the central longitudinal black band on the third segment reaches the basal margin, and the

black band on the lower margin is much deeper and occupies the two-thirds of the segment, so that the yellow markings on the upper part of the segment are isolated and much smaller.

Length from 7 to  $8\frac{1}{2}$  mm.

Becker in his excellent work on the Egyptian Diptera seems to have overlooked two of the most important specific characters, which are:— the presence of the vena spuria, and the absence of the tufts of erect bristles on the lamellæ of the male genitalia. This presence or absence of the vena spuria is a very easy and reliable means of distinguishing between our two Egyptian species, a character which had previously been overlooked by Loew in his original description of *S. spinigera*, and pointed out for the first time by Thomson, and later by Bezzi. Another very reliable and equally important character is the presence or absence of the thick strong spine near the base of the posterior tibiæ, below; this character is not emphasised by Becker, probably for the reason that he used the common European *S. pipiens* (which also does not possess the spine), for comparison with his new *S. subtilis*.

This species is not uncommon in Egypt. Out of a series of fifty *Syritta*, only six turned out to be *subtilis* and the rest *spinigera*, and the six specimens (two males and four females) were all caught in my garden at Shoubrah, in the months of November, December and January. Becker has found it at Luxor and Suez.

So far this species has only been recorded from Egypt but very probably it exists in other parts of North Africa.

While this work was in the press I have obtained large series of the above species at Ramleh (Alexandria) (18.6.22); they were hovering on *Polygonum equisetifolium* on the edge of a Banana plantation. *S. spinigera* was also present, but the above species greatly outnumbered it.

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## 10. EUMERUS MEIG.

MEIG., System. Beschreib., III. 202. CII. (1822).

*SYNONYMY*:—*Pumilio* SCHEMBRI in litt. apud. ROND., Annal. Soc. Entom. Fr., (2). VIII. 127. (1850).

Rather small to medium sized species, which bear very moderate to thick and rather coarse pubescence, and which possess on the abdomen rather peculiar pale lunules, which sometimes are obscured by a reddish, or chestnut-red ground colour.

Head broader than the thorax, with the face flat and devoid of any central knob, but bearing very dense white or yellowish dust, as well as a universal, rather long, pubescence. The lower part of the occiput is shallow, but suddenly inflated above. The vertex is very elongate and the distance between the two posterior ocelli is much smaller than the distance between these and the anterior ocellus. Eyes more or less hairy and touching for only a rather small distance in the male but always widely separated in the female, and with the facets on the front half enlarged. Antennæ rather short and with the third joint usually distinctly larger in the female. Arista inserted well before the middle of the third joint, three-jointed and quite bare.

Thorax rather quadrate, distinctly marginate, thinly or coarsely punctate, slightly arched and entirely æneous-black, but sometimes with two lighter, more or less distinct, light bands; it may possess dense and coarse light hairs, or it may be almost bare, with very short pubescence.

Abdomen generally æneous-black like the thorax, much longer than the latter, with almost parallel sides, and is either thinly or coarsely punctate. It nearly always possesses three pairs of characteristic whitish lunules, which are sometimes obscured by the reddish ground colour (*E. muscidus*). Pubescence either very dense, or rather scarce and inconspicuous but always short and adpressed.

Legs strong, (except in *E. muscidus* where they are decidedly weak in comparison with the heavy body) blackish with yellowish markings; all the femora are curved and rather swollen and the hind femora much more thickened and bearing on the under surface

a single row of short black spines; usually the distal halves of the hind tibiæ are also rather swollen and curved; generally the pubescence on the legs is rather dense and long.

Wings as a rule, rather greyish, with the radio-median cross-vein never straight or vertical, and placed at or beyond the middle of cell M2; Radius 4+5 with a loop, which, in the Egyptian species, is rarely almost as deep in the *Eristalinæ*; the turned up part of M1+2 is remarkably undulated and at its upper margin rather marked; the median cross-vein has its lower end much nearer the wing-margin than its upper end.

Although this genus is very distinct and sharply defined it shows affinities with several genera. The incrassate hind femora, elongate vertex, and the enlargement of the facets on the front part of the eyes, seem to show relationship to *Syrirta*. It also resembles *Paragus* in such characters as the turned up portion of M1+2, the form and clothing of the face, the thorax and scutellum, and in the habits of the adults, which appear to mimic small aculeate Hymenoptera. However, the habits of the larvæ bring it in relationship with two other genera which do not seem to be represented in Egypt, *Merodon* and *Xylota*.

This genus is not a very extensive one, there being about 80 known species, of which about twenty occur in Africa and the rest in Europe (about twenty species), South Asia, Macassar, Australia and Tasmania.

Bouché in 1847 was the first to breed a species from bulbs of the common onion (*Allium Cepa*), which were destroyed by the larvæ; these lived inside the bulbs and pupated either in the bulbs or in the neighbouring earth. Our common species here, *E. amoenus*, has also been bred from *Allium Cepa* by Mr. F. A. Willcocks of the Sultania Agricultural Society, and in the Entomological Section, Ministry of Agriculture; and *E. vestitus* from Potato tubers imported from Palestine, Cyprus and Greece, as well as being bred from Battikh (water melons), from Tul-Karam (Palestine), grapes from Mex (near Alexandria), and from the rotten stems of paw-paw from Tel-el-Kebir. I have also bred *E. amoenus* from larvæ found in the rhizomes of the german Iris (*Iris germanica*) in my garden, where a large border was almost completely destroyed by it, as well as by the larvæ of *Syrirta*. However, I believe that the damage was started by the "bulb mite" (*Rhizoglyphus hyacinthi*) and not by the larvæ themselves, these merely continuing the damage, after decomposition of the tissue had been caused by "the bulb mite."

According to Bouché the larva is dirty greyish yellow, spinulose, wrinkled, and flat below; the anterior spiracles are brown; at



the posterior end there is at each side a conical, wrinkled wart or filament and below them a brown posterior spiracular process which bears the spiracles on the truncated end; this is wrinkled in its basal part. He gives the length as fully 6 mm., but Lundbeck states that Herold gives 8-11 mm. (which I think must be the correct length).

The species of *Eumerus* are curious, interesting and characteristic flies, which seem to mimic bees in their flight. They occur on various flowers in gardens and in waste places and our *E. vestitus* is nearly always found sitting on hot sandy places.

Of the genus over 40 species are known from the Palaearctic region, three of which have so far been found in Egypt.

### TABLE OF EGYPTIAN SPECIES.

- |   |     |  |   |                 |      |
|---|-----|--|---|-----------------|------|
| 1 | (2) | Radius 4+5 with a deep loop almost as in <i>Eristalis</i> , (Pl. VI, fig. 6).....  | 1 | <i>muscidus</i> | BEZ. |
| 2 | (1) | Radius 4+5 only slightly dipped.   |   |                 |      |
| 3 | (4) | Hind metatarsi of male a little swollen and with very short inconspicuous pubescence, (Pl. VI, fig. 3, Pl. I, fig. 14 and Pl. II, figs. 3 and 10)..... | 3 | <i>amœnus</i>   | Lw.  |
| 4 | (3) | Hind metatarsi of male very swollen, incrassate and very hairy, (Pl. VI, fig. 4).  | 3 | <i>vestitus</i> | BEZ. |

#### 1. *E. MUSCIDUS* BEZ. (Pl. IV., fig. 6)

BEZ., Syrph. æthiop. Mus. Nat. hungarici, 14. (22), 16; (24) 59. (female) (1921).

**DIAGNOSIS:**—Abdomen with some yellowish-red markings; legs rather simple and slender; scutellum with pale, dense pubescence; Radius 4+5 with a deep loop.

**DESCRIPTION:**—*Female:* Face and frons entirely shining æneous-black and covered with white hairs, which, on the face and the sides of the upper part of the frons, possess a silvery sheen;

the face is very short and flat; peristoma narrow; mouth small and oval; frons much narrower than in the other species; the vertex and occiput are rather puffed out and possess pale greyish pubescence. Eyes entirely covered with dark grey hairs, which are rather long and tufted. Antennæ rather short, with the two basal joints small, black and the third joint medium, rounded, rusty-red, and possessing on the outside, some light, ashy-coloured dust; arista blackish, quite bare and thin.

Thorax longer than wide, entirely æneous-black, rather shining and finely punctate; it possesses the usual pair of whitish lines on the front of the disc, which are rather inconspicuous and scarcely extend beyond the middle; the pubescence on the disc, as well as on the side margins and the pleuræ, is fairly long, pale and even; scutellum rather shining æneous-black, punctate with the lower margin flattened and somewhat blunt.

Abdomen elongate, rather flat, but gradually tapering towards the apex, where it is conical; it is shining æneous-black, except for the following markings:—two large yellowish-red spots on the sides of the second segment, two much smaller and fainter ones on the side margins near the apical corners of each of the third and fourth segments respectively, and the apex of the fifth segment which is also yellowish-red. The second segment possesses two white lunules which are indistinct and obscured by the large reddish markings in my type specimen; these, however, Bezzi describes as "oblique, separated, but not dilated in the middle." The third and fourth segments each possess two white lunules which are distinct only in certain lights; the lunules on the third segment are oblique, slightly bent in their middle and with their upper ends rounded, well separated and almost touching the basal margin of the segment; the lunules on the fourth segment are distinctly wider, with their upper ends rather more widely separated; their upper three-fourths run parallel with the side margins of the segment, then they suddenly bend outwards at right angles, thus their lower fourth being parallel with the lower margin. Pubescence on the abdomen is entirely whitish, dense and rather short. Venter shining æneous-black, but with the yellowish-red markings of the dorsum showing through by transparency; pubescence very pale and rather short. Ovipositor very small, retracted and with a small tuft of rusty-yellow hairs.

Legs shining blackish but with the knees and the basal halves of the tibiæ yellow. All the tibiæ and the tarsi bear strong spurs and the hind femora, which are weak, possess from seven to eight strong bristles on the ventral surface near the apex.

Wings transparent, colourless, with the nervures strong and

black, except at the base where they are brown, and the subcosta yellowish; Radius 4+5 is much more dipped than in the other species of this genus, nearly as much as in *Eristalis*; the stigma is short, small and only slightly darkened. Squamulae with their fringes white, and their margins yellow. Halteres white.

Length, about 13 mm.

This species is provisionally included in the list of Egyptian Syrphidæ, but hitherto it has only been recorder from Romani where a single female was captured by A.W. Boyd on 23.9.1916, the specimen being in the collection of the Entomological Section, Ministry of Agriculture. This specimen lacks both antennæ, consequently the above description of them has been burrowed from Prof. Bezzi's type. The only other female known, from Tatahonina (North ? Africa), belongs to the Budapest Museum, from which Prof. Bezzi made his original description. Our specimen from Romani, however, seems to be different from the type as regards the colour of the abdomen; in the original description: "Abdomen elongatum, planum sed conicum, basi thorace non latius, apicem versus valde attenuatum, totum nigroæneum nitidum, passim paullo purpurascens; segmentum primum immaculatum, secundum lateribus paullo et obscure rufescèntibus, lunulis duabus albis, obliquis, separatis intus rotundato-dilatatis et semper sat distantibus; quintum breve, immaculatum..."

Further knowledge of this curious and interesting fly is much to be desired, as it represents a distinct group of this genus owing to its comparatively slender hind femora, and its wing venation; moreover nothing is known about its habits. The male is unknown.

## 2. E. AMENUS LW.

(Pl. IV, fig. 3, Pl. I, fig. 14 and Pl. II, fig. 3 and 10).

Lw., Stettin. Entom. Zeitg., IX. 132. 15. (1848); SCHIN., Verh. zool.-bot. Ges. Wien, VII. 429. 21. (1857); BECK., Mitteil. Zool. Mus. Berl., II. 87. 122. (1903); BECK., BEZ., KERT. u. STEIN, Katal. Palæarkt. Dipt., III. 133. (1907); KERT., Catal. Dipteror., VII. 313. (1910).

*DIAGNOSIS*:—Abdomen without any yellowish-red markings; legs with the hind femora bearing two rows of spines at their distal ends beneath; hind metatarsi of male a little swollen,

but with very short inconspicuous pubescence; scutellum shining æneous, almost free from pubescence; Radius 4+5 only slightly dipped.

*DESCRIPTION*.—*Male*: Face and frons shining black, but entirely covered with dense silvery-white dust and some white hairs, amongst which are intermingled yellowish ones. Jowls, as well as most of the occiput, covered with white dust and whitish-grey pubescence; the pubescence on the very shallow occiput is extremely short. Vertex very long and puffed out above and pointed in front, very shining æneous-black and sparsely punctate, with a hair arising from each dot; its pubescence is rather long, tawny-yellow on the extreme front, blackish about the ocelli and again tawny-yellow on the back half; the extreme tip of the vertical triangle is usually covered with yellow dust and the anterior ocellus is much further from the two posterior, than the two latter are from each other. Eyes touching for a distance which is shorter than the length of the frons (for about six to seven facets), covered with white, very inconspicuous hairs.

Antennæ with the two basal joints black and the third reddish black but blackish above; most of the second and all the third joints are covered with shining whitish dust and in addition the second joint bears a short greyish-white pubescence; arista three jointed, about twice the length of the third joint of the antenna with its apical half very slender; its two basal joints are deep reddish-brown, while the long third joint is entirely blackish.

Thorax very shining, blackish æneous, and rather densely punctate, with a pair of whitish bands in front, which are inconspicuous and scarcely extend beyond the middle; the humeri are rather swollen and prominent, with a distinct and deep post-humeral suture; pubescence very short, pale and inconspicuous, except for a tuft of rather longer whitish hairs on the suture. Scutellum also very shining æneous, densely punctate and with a similar pubescence; its margin is serriform and flattened, except at the basal corners; the margin appears as if it might be composed of about twenty short stout spines which had coalesced except at their tips.

Abdomen about twice as long as the thorax and entirely shining æneous-black, with three pairs of whitish lunules, one pair on each of the second, third and fourth segments respectively; it is also densely punctate like the thorax with short pale pubescence, which is rather inconspicuous, except for a tuft or fringe of whitish hairs on the basal corners on the sides of the second segment, which is not unlike the fringe in *Syritta*. Venter impunctate, reddish-brown near the base, opaque-grey, but with a fairly

broad darker stripe in the centre; it is practically free from pubescence except on the central darker stripe, where it is whitish and sparse. Hypopygium fairly large, shining æneous and brown and possessing rather sparse pale pubescence.

Legs black with the extreme tip of the anterior femora and the base of all the tibiæ brownish-yellow, or yellow, as well as the middle metatarsus, and the tips of the other joints of the middle tarsi, and all the tips of the front tarsi; the three pairs of femora are rather swollen; the hind pair is much more swollen and in addition its lower distal half bears two rows of about eight sharp black spines, between which the tibiæ can fold back; the hind metatarsi are swollen, a little less than the tibiæ and more than the following joint of the tarsus, and there is little gradation between these three joints, so that the hind legs appear unusually thick and clumsy. The joints of all the tarsi bare short, but distinct, spurs and those on the hind pair are rather hidden by the dense pubescence. The pubescence on the upper part and sides of the anterior pair of legs is rather short, pale and inconspicuous, while they are quite bare on the under-surface; on the hind legs it is rather longer, denser, erect and whitish in colour; on the base of the upper part of the tibiæ on the inside there is a fringe of about six or seven white bristles.

Wings rather smoky-greyish; subcostal cell darkish-brown and Radius 4+5 is slightly dipped. Squamulæ rather opaque and whitish, with a yellowish margin; the alar pair are small and bear simple whitish fringes; the thoracal pair are much longer and also possess white fringes which are much longer and composed of compound hairs as in *Synitta*. Halteres yellow, with a brown base.

*Female:* Very similar to the male but usually larger. The frons is not so shining and is entirely black, except for two thin lines of whitish-grey dust on its side margins, which extend from the sides of the face to the lower margin of the vertex, where they end abruptly; vertex very broad. The punctation on the frons, vertex, thorax and abdomen is rather coarser in the male and the pubescence on the thorax and abdomen is denser. The apex of the abdomen is more pointed.

Length from 7 to 10 mm.

*E. amœnus* is the commonest species of this genus in Egypt, and may be found from October to June throughout the Nile Valley from the Mediterranean coast to Upper Egypt and in the Fayum. It is rather common in the Mariout district. It is known to occur in North Africa, Asia Minor and South Europe.

### 3. *E. VESTITUS* **BEZ.** (Pl. VI, fig. 4).

BEZ., Ditt. raccolti d. Leo. Fea, Ia, 43. (442). 37. (1912), Syrph. Ethiop. Region, III. (1915), et Syrph. æthiop. Mus. Nat. hungarici, 16. (24). (1921).

*DIAGNOSIS*:— Radius 4+5 only slightly dipped; hind metatarsi of male very swollen, incrassate and very hairy.

*DESCRIPTION*:— *Male*: The face and frons, which are short and flat, are entirely covered with dense silvery-white dust and hairs like in *E. amœnus*; jowls and occiput also resembling those of the latter; vertex very elongate, rather puffed out above and very pointed in front; it is densely punctate and covered with tawny-yellow dust, except about the anterior and the two posterior ocelli and on the punctations of the back, where it is rather shining æneous-black; its pubescence is rather long and consists of a few white hairs on the extreme narrow front, blackish hairs about the ocellar triangle and pale tawny-yellow hairs on the hinder third. Eyes moderately covered with short, pale and inconspicuous hairs. Antennæ with the third joint rather truncate on the outer side and usually blackish, but sometimes rather reddish or reddish-brown; the three joints possess some whitish dust and in addition the two basal joints possess a few short pale and erect hairs beneath; arista with the two very inconspicuous basal joints blackish and the rather thin, long, third joint also black, but reddish-brown at the base. Thorax coarsely punctate, somewhat shining, and covered with yellowish-grey tomentum, except for some characteristic, more shining, and bare areas above the suture; this tomentum consists of two thin median longitudinal lines and two fairly large round areas on the outside of each of these two lines, above; the dust is denser on the base, side and lower margins of the thorax, as well as on the rather prominent humeri and in the sutures; the pubescence is greyish-tawny, rather short but erect on the disc, and longer and yellower on the side-margins and below the postallar calli; the pleuræ are densely but not coarsely punctate, also covered with greyish dust and possess greyish hairs; there is a remarkable fringe of shining whitish-grey hairs on the posterior margin of the mesopleuræ and a less dense and shorter fringe on the pteropleuræ. Scutellum less

coarsely punctate and consequently more shining aeneous than the thorax, with its lower margin covered with dirty white dust ; its pubescence is longer than that of the thorax and consists of dark grey or tawny hairs on the disc and longer, very characteristic tawny-yellow bristly hairs on the lower margin.

Abdomen black, coarsely punctate, mostly dull and almost entirely covered with grey and tawny-yellow dust, which is much thicker on the two pairs of lunules, (one pair on each of the second and third segments), and on the apical half of the fourth segment, as well as on the lower margin of the third segment. The lunules on the second and third segments are fairly large and conspicuous with black punctations, the pair of lunules on the second segment being narrower and their inner ends more remote from each other than those on the third segment ; the fourth segment is covered with greyish-yellow dust, which is coarsely punctate with black, except for the broad basal corners which are free from dust, as well as a thin median transverse basal line which is continued in another thin vertical, median line downwards to about one-third the length of the segment ; in other words, the fourth segment possess two broad lunules, the lower margins of which are indistinct owing to the dust entirely covering the lower part of the segment, although the dust on the lunules is paler and brighter. Pubescence on the abdomen is fairly dense and short, mainly following the ground colour, but with a few rusty-yellow hairs on the disc, except for a fringe of grey hairs on the puffed out basal corners of the second segment, which is the broadest part of the abdomen. Hypopygium asymmetrical and black.

Legs black, with the knees of the two anterior pairs broadly yellow, also the extreme base of the posterior tibiæ, the ventral side of the very swollen hind metatarsi and all the front tarsi are yellow. The posterior femora are very swollen and bear two rows of black spines on their lower distal ends ; the hind tibiæ are also rather swollen ; the hind metatarsi are about as broad as the broadest part of the tibiæ, triangular, flat below, and ending above in a sharp ridge. The middle tibiæ have distinct spurs and the four basal joints of all the front, middle and hind tarsi are spurred ; these spurs are usually yellow on the front legs and black on the middle and hind legs. The pubescence on the front legs is fairly long and whitish but occurs only on the upper surface and sides ; on the hind femora and tibiæ the pubescence is also whitish, but more erect, longer and rather tufted. The four basal joints of the hind tarsi bear on their lower surface and sides very short but erect and tufted rusty-yellow

hairs ; the pubescence on their dorsal surface is mainly blackish, much longer, and the characteristic metatarsus bears on its sharp ridge a remarkable fringe of long, black, erect and tufted hairs.

Wings pellucid, rather greyish, with the base of the veins light brown and the subcosta and stigma brownish ; Radius 4+5, slightly dipped. Squamulæ and their fringes white, and their margins yellow. Halteres yellowish-white.

*Female*: Very similar to the male but the dust and pubescence on the frons and vertex is usually yellowish or even tawny-yellow. The hind metatarsi, although nearly as swollen as in the male, are more rounded and do not possess that remarkable sharp dorsal ridge with its characteristic black fringe.

Length from 8 to  $9\frac{1}{2}$  mm.

*E. vestitus* was originally described from West Africa (Rio Cassine, Portugese Guinea), where it lives together with a closely allied species: *E. obliquus*. Bezzi (1912)\* states that he had received from Becker specimens from Egypt of the species described above (*vestitus*) which were erroneously classified as *obliquus*. Moreover Becker (1902)\*\* describes the female of *E. vestitus* under the name of *obliquus* and this description corresponds entirely with that of *vestitus*.

*E. vestitus* is not a common species in Egypt and is rather local. It is a very interesting fly owing to the fact that it closely mimics the flight of Hymenoptera, and even to a practised eye it is a very difficult matter to distinguish them. I have watched it at Marg flying above *Polygonum equisetifolium*; it does not remain motionless for a second, but continuously moves and vibrates its wings ; it rests on the flowers for a short time and suddenly darts away and sits on the sand and then back again on the flowers, repeating this performance over and over again.

There is no doubt that the larva feeds on decaying vegetable matter.\*\*\*

I have captured the adult at Shoubra, Marg, Kerdacé, Wadi Hoff, Mariout, Fayoum and I believe it to be more widely distributed. My dates extend from April to October.

It is known to occur in Syria, Greece, West Africa and no doubt it occurs in many other localities, but, owing to its close resemblance to *E. obliquus*, probably it occasionally has been confused with the latter.

\*M. BEZZI: Ditt. raccolti d. Leo. Fea, 43. 44. (442). (443). 37. (1912).

\*\*Th. BECKER: Mitteil. Zool. Mus. Berl., II. 87. 123. (1902).

\*\*\*Vide p. 104.



## CERIOIDINÆ.

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Medium sized or moderately large, bare and elongate flies which are exceedingly like the *Conopidæ* and some of the smaller wasps (*Vespidæ*). They are characterised by the antennæ which are very often placed on a long petiole and which are elongate, porrected and with a terminal style, and by the wings which possess usually the costal border as far the vena spuria darkened, and an *Eristalis*-like loop in Radius 4+5, from the bottom of which a peculiar veinlet almost bisects the cell beneath (R5) as in the *Microdantinæ*; Radio-median cross vein placed after the middle of cell M2.

There is so far only about 70 species of this very distinct and sharply defined group known. They seem to be chiefly represented in Central America and Africa but they also occur in Europe, North America, Tasmania, India, Jamaica, Asia Minor and Japan.

Very little is known about the metamorphoses of this group. Verrall states that *C. conopsoides* has been bred from flowing sap, but I strongly suspect them to possess some relation with Hymenoptera, especially ants.

## II. CERIOIDES ROND.

ROND., Annal. Soc. Entom. Fr., (2). VIII. 211. (1850).

SYNONYMY:— *Ceria* FABR., Syst. Entom., IV. 277. (1794), (*praecocc.* SCOP., 1763).

*Sphecomorpha* ROND., Annal. Soc. Entom. Fr., (2). VIII. 212. (*Sphiximorpha*) (1850).

*Sphiximorpha* ROND., Dipterol. Prodr., I. 55.3. (1856).

*Spiximorpha* ROND., Dipterol. Prodr., II. 12. (1857).

Head rather flattened, broader than the thorax with the face almost straight in front, but descending below the eyes and somewhat produced at the front mouth-edge. Eyes touching in the male, but well separated in the female. Antennæ elongate and sometimes placed on a more or less long petiole or stalk; the first joint is long and slender but the second and third joints are shorter, about equal in length and the two together are about as long as the first joint; these two joints form together an elongate oval mass, and the third joint bears a terminal style.

Thorax rather elongate, quadrangular, rather thinly rugose, and always possessing yellow spots. Scutellum semicircular, more or less yellow.

Abdomen elongate, cylindrical, contracted, more or less wasp-shaped at the base, and bearing yellow bands or markings. Legs moderately strong with the femora somewhat thickened and the tibiæ sometimes subclavate.

Wings with a distinctive and peculiar venation; Radius 4+5 has a deep loop about the middle of cell R5 at the bottom of which loop arises a veinlet descending about half way or less across cell R5; radio-médian cross-vein possesses the costal border as far as the vena spuria darkened and also a darkened border along Cubitus 2.

The larva according to Dufour, who has described and figured it (as well as the pupa) (Ann. Soc. Ent. France, 2 V., 19, Pl. I, f. 1-6. 1847) lives in the sap of diseased trees such as Elms (*Ulmus*). Schiner also states that he has bred an European species *C. conopsoides*(?) from decaying poplars (*Populus*).

1. *C. VESPIFORMIS* LATR. (Pl. V, fig. 7).

LATR., Gen. Crust. et Ins., IV. 328. (*Ceria*) (1809) et Consid. génér., 443 (*Ceria*) (1810); MEIG., System. Beschreib., III. 161. 3. (*Ceria*) (1822) et VI. 348. (*Ceria*) (1830); MACQ., Suit. à Buff., I. 484. 3. (*Ceria*) (1834); Lw., Neue Beitr., I. 7. 2. (*Ceria*) (1853); SCHIN, Verh. zool.-bot. Ver. Wien, VII. 447. 4. (*Ceria*) (1857) et Nov. Reise, Dipt., 369. 104. (*Ceria*) (1868); ROND., Dipterol. Prodr., II. 214. 2. (*Ceria*) (1857); PALMA, Annal. Accad. Aspir. Natur. Napoli, (3). III. 38. 2. (*Ceria*) (1863); RÆDER, Berlin. Entom. Zeitschr., XXXI. 73. (*Ceria*) (1887); VERR., Brit. Fl., VIII., Catal. Syrph., 119. (*Ceria*) (1901).

*SYNONYMY*:—*clavicornis* COQUEB. (nec. FABR.), Illustr. Icon. Insect., 102. t. XXIII. f. 8. (*Ceria*) (1804).

*scutellata* MACQ., Dipt. Exot., II. 2, 10. 1. t. I. f. 1. (*Ceria*) (1842) et Explor. scient. de l'Alegrie, Zool., III. 463. 148. (*Ceria*) (1849); SAUND., Trans. Entom. Soc. Lond., IV. 66. (*Ceria*) (1845).

*intricata* SAUND., Trans. Entom. Soc. Lond., IV. 64. 1. t. IV. f. 2, 2a. (*Ceria*) (1845); WALK., List Dipt. Brit. Mus., III. 538. (*Ceria*) (1849).

*conopsiformis* A. COSTA, Atti. R. Accad. Napoli, (2) V. 25. 50 (*Ceria*) (1893) *lapsus*.

*DIAGNOSIS*:—A quaint and beautiful fly, wasp-like in appearance, easily distinguished from any other Egyptian member of the family by its porrected antennæ, which are placed on a long and strong petiole and which bear a terminal style, and by its peculiar wing venation.

*DESCRIPTION*:—*Male*: Head rather flattened, broader than the thorax; face and frons entirely yellow, rather shining and quite bare, with a dark brown stripe running down the centre of the face and extending from the base of the antennal petiole to the upper mouth edge, but not quite reaching the latter; there are also two small triangular dark brown markings on the frons, one on each side of the petiole; the jowls are black and this colour extends to the eyes; proboscis brown; the lower part of the occiput is inflated and yellow, in the middle black, and the occipital upper border is again much produced and bright yellow; vertex inflated and bearing the three ocelli close together; eyes dark reddish-brown, bare, meeting for a distance which is a little less than

the length of the vertex; antennal petiole long and strong, blackish, except at the extreme base and apex where it is light brown; antennæ dark reddish-brown, almost blackish, with the basal joint elongate and thin, and the second and third joints much shorter, inflated, and forming together an elongate oval mass; the third joint is shorter than the second with a terminal thin, acute style.

Thorax dull black, except the humeri bright yellow and a spot immediately behind the suture on the side-margin also yellow; the pleuræ are blackish, but with a large, elongate and conspicuous yellow spot occupying all the mesopleura and most of the sternopleura; scutellum semicircular and entirely yellow.

Abdomen elongate, cylindrical and much narrower at the base; it is somewhat dull, but shining in places and thinly rugose; the basal segment is long, dull black but with the basal corners which are very inflated, broadly yellow; there is a slight depression at about the middle of this segment and its lower margin is produced in the centre; the second, third and fourth segments are black except for a conspicuous and very uniform yellow band, more like a ring, on the lower margin of each segment; the band on the fourth segment is a little deeper than the one on the others; each of these three segments possess two peculiar longitudinal depressions, one on each side of the middle; the fifth segment is very short, entirely black and rather shining. Venter brown, but yellow at the base, opaque and shining and with the yellow rings on the dorsum continuing around each segment. Hypopygium very small and reddish-brown. Legs mostly yellow but all the coxæ and trochanters brown; front, middle and hind tarsi brown and the tibiæ possess a brown ring near the apex; the hind femora are rather thickened and their apical thirds brownish; they possess two inconspicuous rows of minute black spines on their ventral surface near the apex, between which the tibiæ fold back; the hind tibiæ are subclavate and their apical thirds are also brownish; the legs are entirely bare except for a very minute yellow and inconspicuous pubescence beneath the hind tarsi.

Wings with almost all the upper half brownish and the lower half pellucid; the brown colour extends from the costa to the vena spuria; there is also a brownish border along Cubitus 2, dilated at the end and extending along Cubitus 1, Media 3 and across cell R; the veinlet at the bottom of the loop in Radius 4+5 is short. Squamulæ very small, pale yellow with very short whitish fringes. Halteres yellow.

*Female*:—Similar to the male; frons with its upper half black and its lower half yellow and with a triangular dark brown mark-

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ing in the centre, the top angle of which reaches the darkened base of the petiole

Length of body excluding the antennæ: about 9 mm.

Length of body including the antennæ: about 11 mm.

This very interesting species is very rare. I possess only two individuals, one male and one female, given me by Mr. F.C. Willcocks and labelled "Ghezireh 1906."

It is known to occur in Central Europe, North Africa and Asia Minor.

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PLATE I.

Fig. 1. Diagram of *Syrphus*: *A.* = Antenna, *Ar.* = Arista, *O.* = Ocelli, *E.* = Eye (compound), *F.* = Frons, *V.* = Vertex, *Oc.* = Occiput, *H.* = Head, *Th.* = Thorax, *Sc.* = Scutellum, *Ab.* = Abdomen, *h.* = Haltere, *S.* = Squamula, *i-vii.* = 1st to 7th abdominal segments, *I, II, III* = Fore, Middle and Hind Legs, *Fe.* = Femur, *Ti* = Tibia, *Ta* = Tarsi (five), *Cl.* = Claw, *Pa.* = "Pad" or Pulvillus, *Hu.* = Humerus, *Su* = Suture, *P.C.* = Post Alar Callus.

- 1 = Costa,
- 2 = Subcosta (Mediastinal or axillary),
- 3 = Radius 1 (1st longitudinal or Subcostal),
- 3 = Radius 2 + 3 (2nd longitudinal or Radial),
- 5 = Radius 4 + 5 (3rd longitudinal or Cubital),
- 6 = Media 1 + 2 (4th longitudinal or Discal),
- 7 = Media 3 + Cubitus 1 (5th longitudinal or Postical),
- 8 = Cubitus 2 (5th longitudinal or Anal cross-vein),
- 9 = Anal 2 (6th longitudinal or Anal),
- 10 = Anal 3 (Axillary),
- 11 = Vena Spuria or false vein,
- St. = Stigma,
- 12 = Humeral (Basal Costal) cross-vein,
- 13 = Radio-median (discal or middle) cross-vein,
- 14 = Media 3 (Lower or small) cross-vein,
- 15 = Cubitus 1 cross-vein,
- 16 = Median (Lower marginal or postical) cross-vein,
- 1st C. = First Costal (basal costal or Mediastinal cell),
- 2nd C. = Second Costal (Mediastinal cell),
- Sc.c. = Subcostal (third costal cell),
- R<sub>1</sub> = Radius 1 (Marginal cell),
- R<sub>3</sub> = Radius 3 (Submarginal or Cubital cell),
- R<sub>5</sub> = Radius 5 (Subapical or 1st posterior cell),
- M<sub>2</sub> = Media 2 (Discal or 2nd posterior cell),
- Cur = Cubitus 1 (3rd posterior cell),
- R = Radius (Upper, 1st basal or radical cell),
- M = Media (Middle, and basal or radical cell),
- A<sub>1</sub> = Anal 1 (Lower 3rd basal, radical or Anal cell),
- A<sub>2</sub> = Anal 2 (Axillary cell),
- Alu = Alula (Axillary lobe).

Fig. 2. Side view of *N. aegyptium*: *Fr.* = Frons, *F.* = Face, *G.* = Gena or cheek, *M.* = Mouth, *Um.* = Upper Mouth-edge, *Th.* = Thorax, *S.* = Suture, *W.* = Wing, *Sc.* = Scutellum, *Bs.* = basal segment of abdomen, *A.B.C.* = Front, Middle and Hind Legs, 1 = Prothorax, 2 = Mesopleura, 3 = Pteropleura, 4 = Sternopleura, 5 = Metapleura, 6 = Hypopleura, 7 = Plumula?

Fig. 3. Hypothetical primitive type of wing venation with the named cross-veins added (after Comstock & Needham).

Fig. 4. Wing of *Tipula* (after Comstock & Needham).

- " 5. *Paragus aegyptius*, head front view.
- " 6. *Paragus tibialis*, head front view.
- " 7. *Paragus aegyptius*, head in profile.
- " 8. *Sphaerophoria flavicauda*, head in profile.
- " 9. *Syrphus corollae*, head in profile.
- " 10. *Eristalis tenuis*, head in profile.
- " 11. *Lasiophthicus albomaculatus*, head in profile.
- " 12. *Mesembrius capensis*, head in profile.
- " 13. *Eristalis tenax*, head in profile.
- " 14. *Eumerus amoenus*, head in profile.

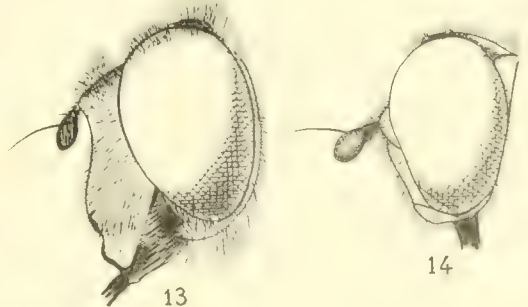
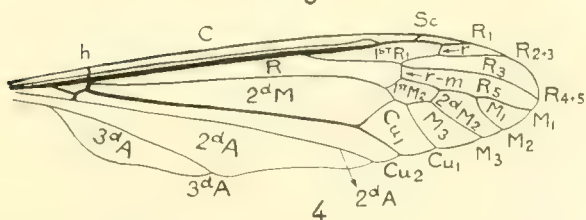
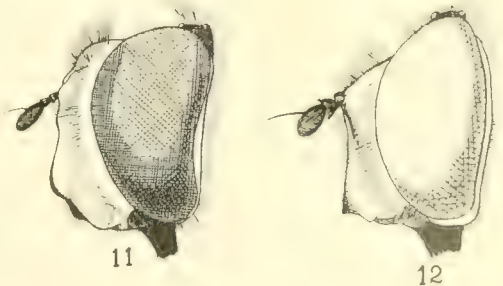
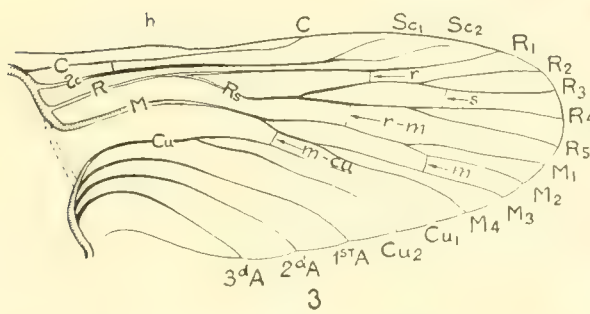
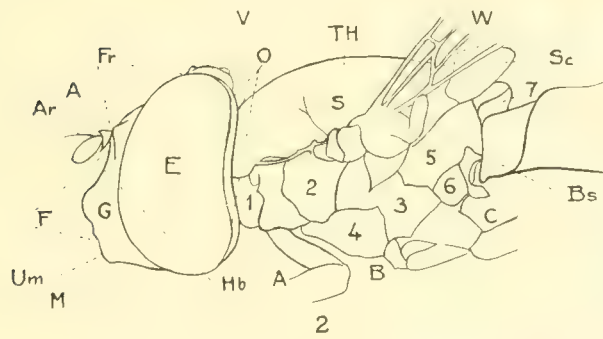
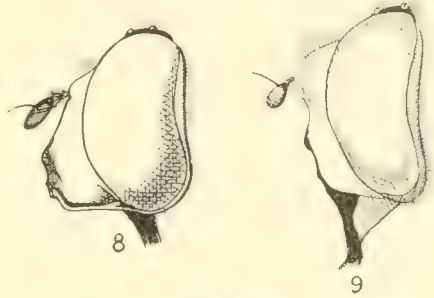
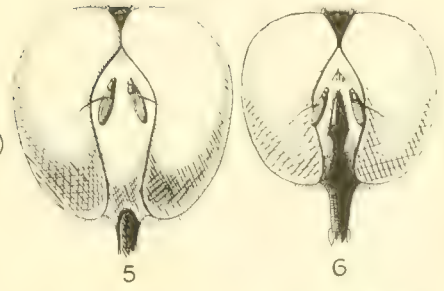
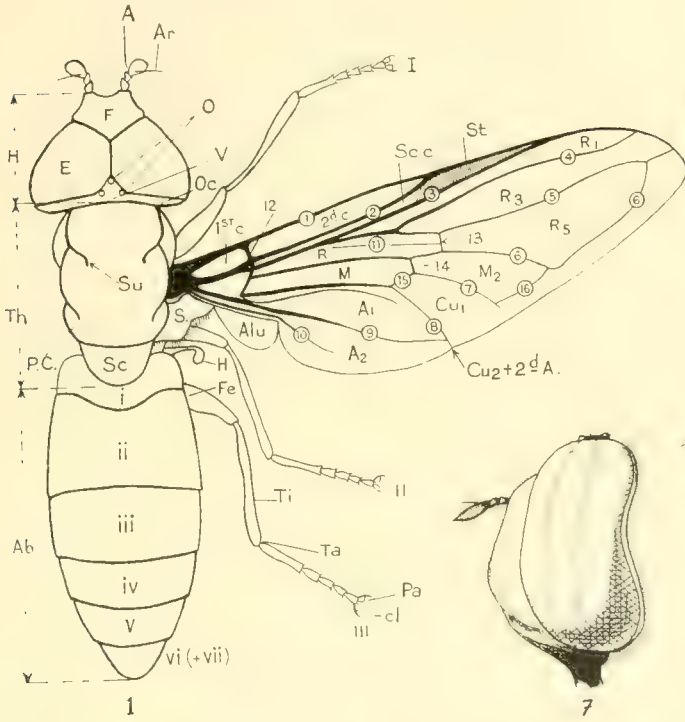






PLATE II.

- Fig. 1. *Eristalis tenax*, wing.  
» 2. *Eristalis tenuifrs*, wing. ✓  
» 3. *Eumerus amoenus*, wing.  
» 4. *Mesembrius capensis*, hind leg, male.  
» 5. *Xanthogramma aegyptium*, hind leg, male showing spine on trochanter.  
» 6. *X. aegyptium*, left front leg of male, showing bicuspidate inner claw.  
» 7. *Mesembrius capensis*, hind tibia and basal tarsus of male showing globiferous hairs.  
» 8. *Syritta spinigera*, hind leg, male.  
» 9. *Mesembrius capensis*, squamula.  
» 10. *Eumerus amoenus*, squamula.  
» 11. *Eumerus amoenus*, antenna.  
» 12. *Syritta spinigera*, hypopygium.



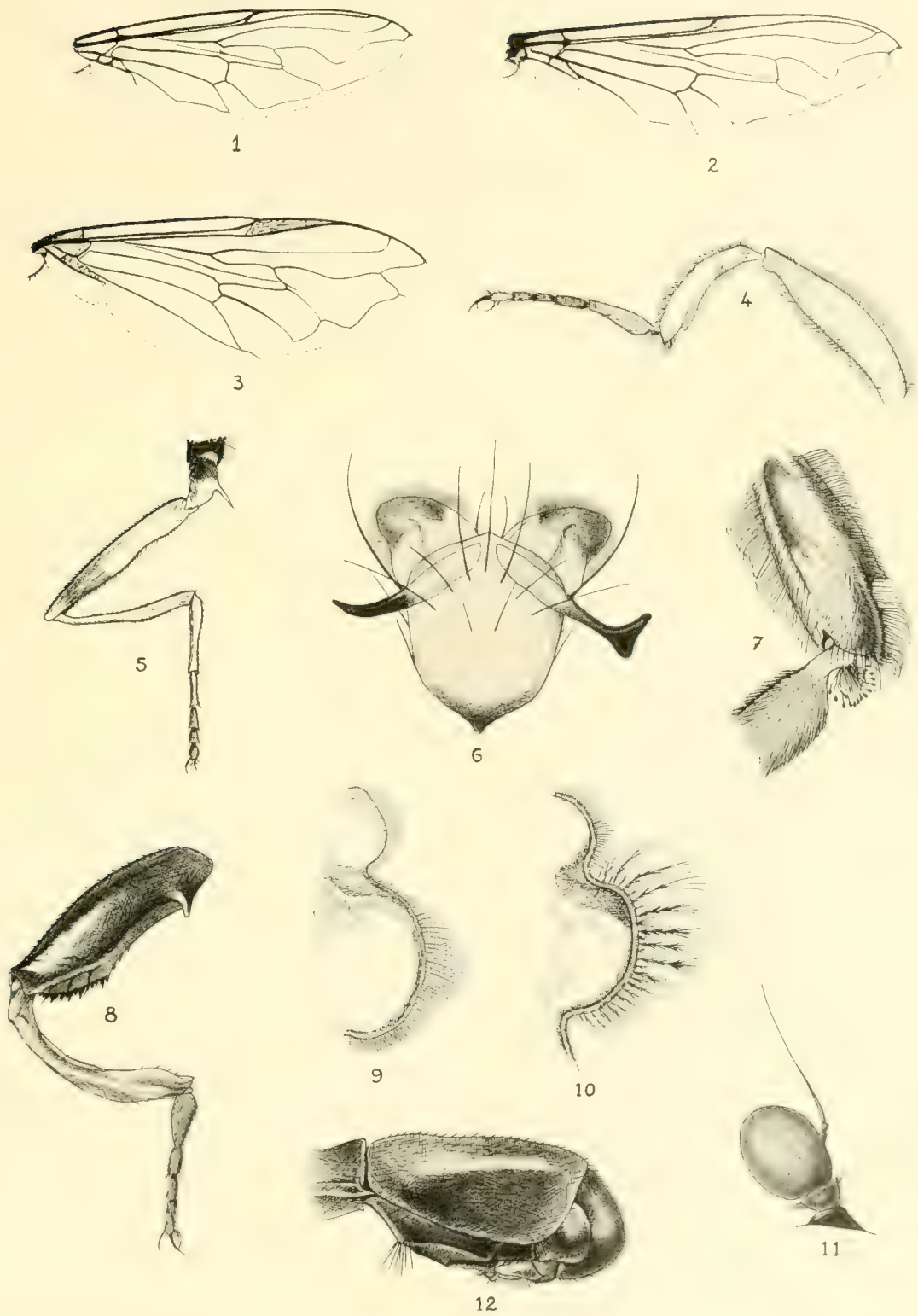






PLATE III.

- Fig. 1. *Paragus ægyptius* Macq., male.  
" 2. *Paragus tibialis* Fall., male.  
" 3. *Paragus tibialis* Fall., var. *hæmorrhous* Meig., abdomen, male.  
" 4. *Paragus tibialis* Fall., var. *trianguliferus* Zett., abdomen, male.  
" 5-6 *Paragus ægyptius* Macq., male varieties, abdomens.  
" 7. *Sphærophoria flavicauda* Zett., male (pale form).  
" 8. *Sphærophoria flavicauda* Zett., female (intermediate form).  
" 9. *Sphærophoria scripta* L., female.  
" 10. *Sphærophoria flavicauda* Zett., var. *calceolata* Macq., male (dark form).  
" 11. *Sphærophoria scripta* L., male.



1875

PARAGUS. SPHAEROPHORIA





PLATE IV.

- Fig 1. *Syrphus auricollis* Meig., female.  
» 2. *Syrphus corollæ* F., male.  
» 3. *Syrphus corollæ* F., female.  
» 4. *Lasiophthicus albomaculatus* Macq., male.  
» 5. *Lasiophthicus pyrastris* L., female.  
» 6. *Syrphus balteatus* Deg., male.  
» 7. *Xanthogramma ægyptium* Wied., male.





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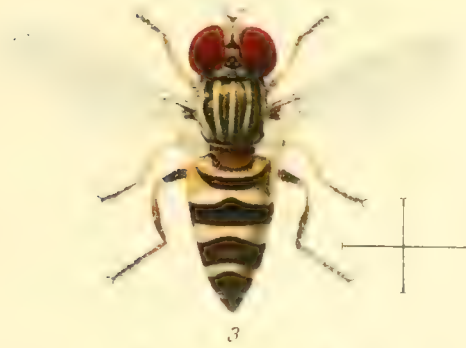
SYRPHUS, LASIOPHTHICUS, XANTHOGRAMMA





PLATE V.

- Fig. 1. *Eristalis tenax* L., male.  
» 2. *Eristalis tæniops* Wied., male.  
» 3. *Eristalis quinquelineatus* F., female, var. *tabanoïdes* Jaën.  
» 4. *Eristalis quinquelineatus* F., male.  
» 5. *Helophilus* (*Mesembrius*) *capensis* Macq., male.  
» 6. *Eristalis æneous* Scop., male.  
» 7. *Ceriodes vespiformis* Latr., female.



E. KASSESSNOFF PIN.

ERISTALIS. HELOPHILUS. CERIODES





PLATE VI.

- Fig. 1. *Syritta spinigera* Lw., male.  
» 2. *Syritta subtilis* Beck., male.  
» 3. *Eumerus amœnus* Lw., male.  
» 4. *Eumerus vestitus* Bez., male.  
» 5. *Pseudodoros nigricollis* Beck., male.  
» 6. *Eumerus muscidus* Bez., female.





E. KASSESSINOFF PINX.

PHOTO-CHROMO-GRAVURE - 1

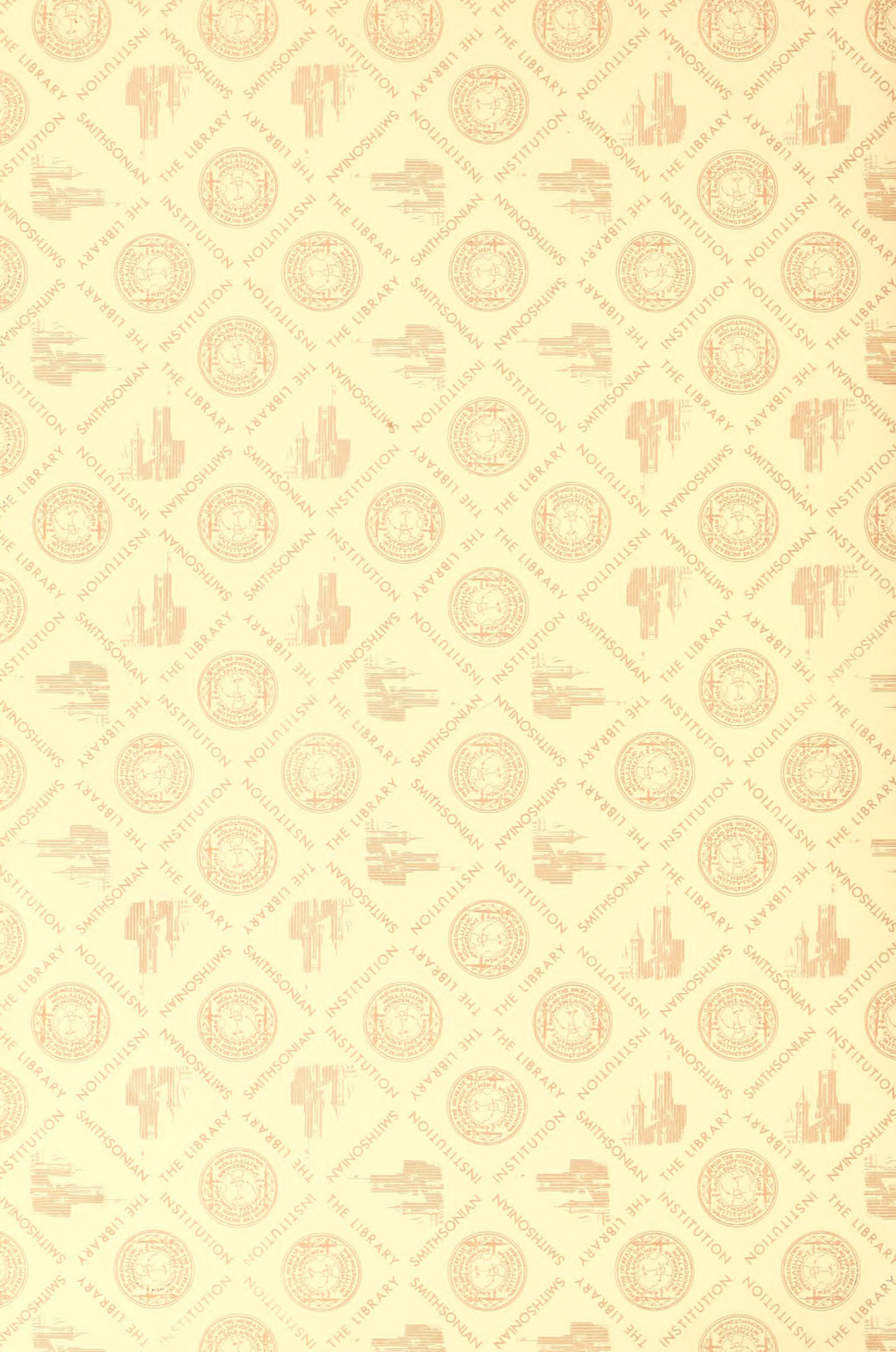
SYRITTA, EUMERUS, PSEUDODOROS

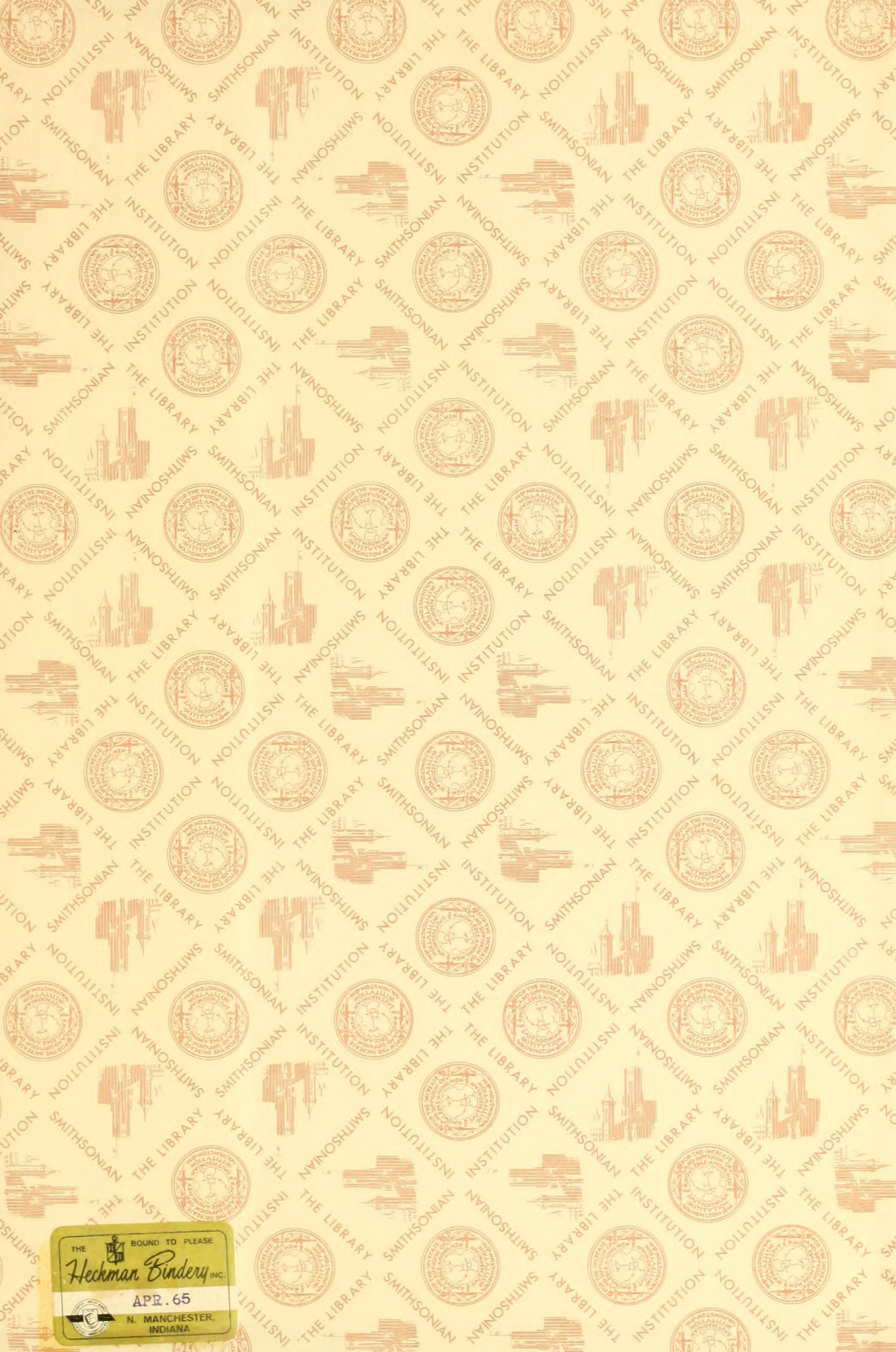












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